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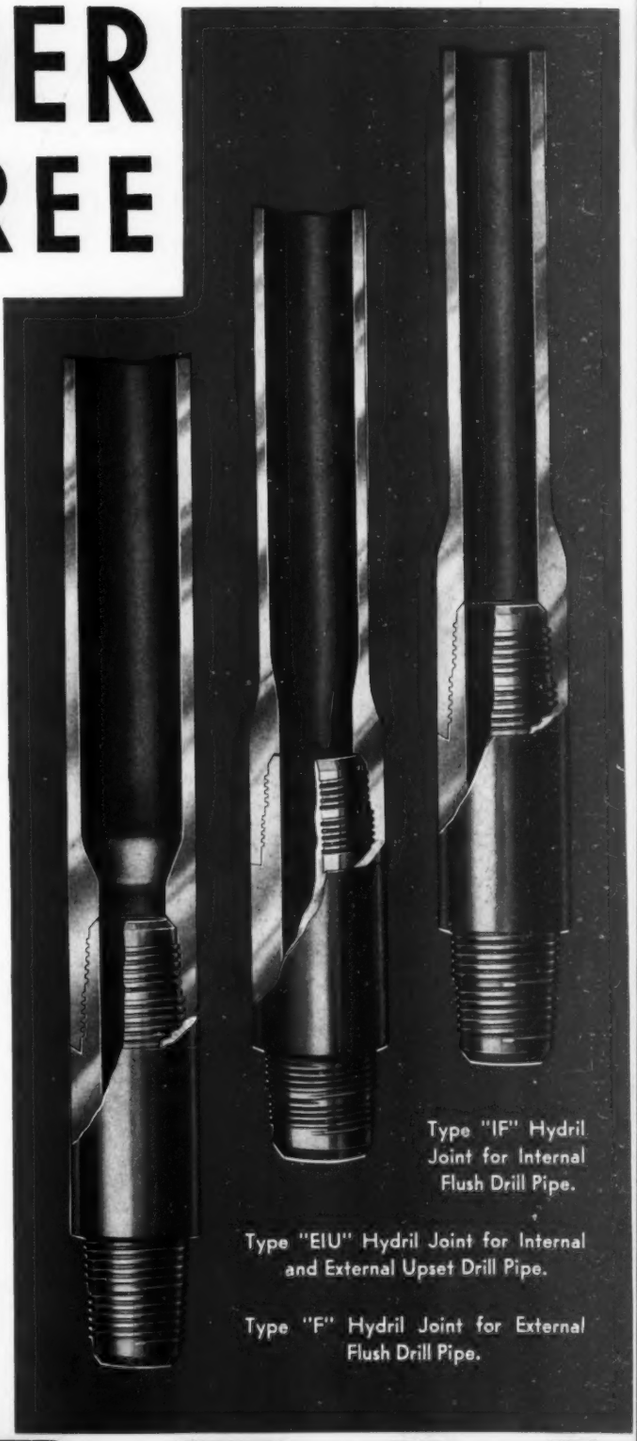

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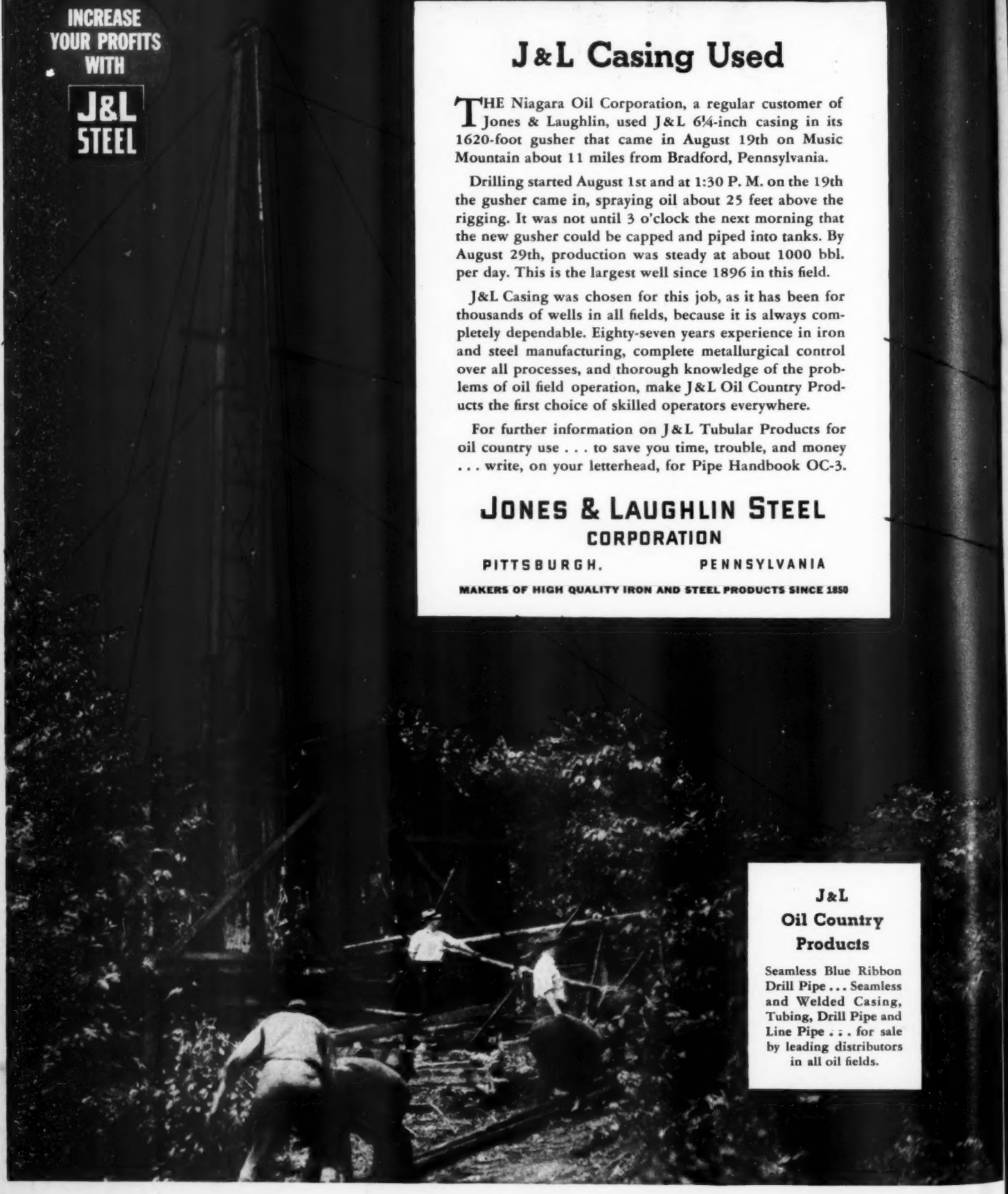

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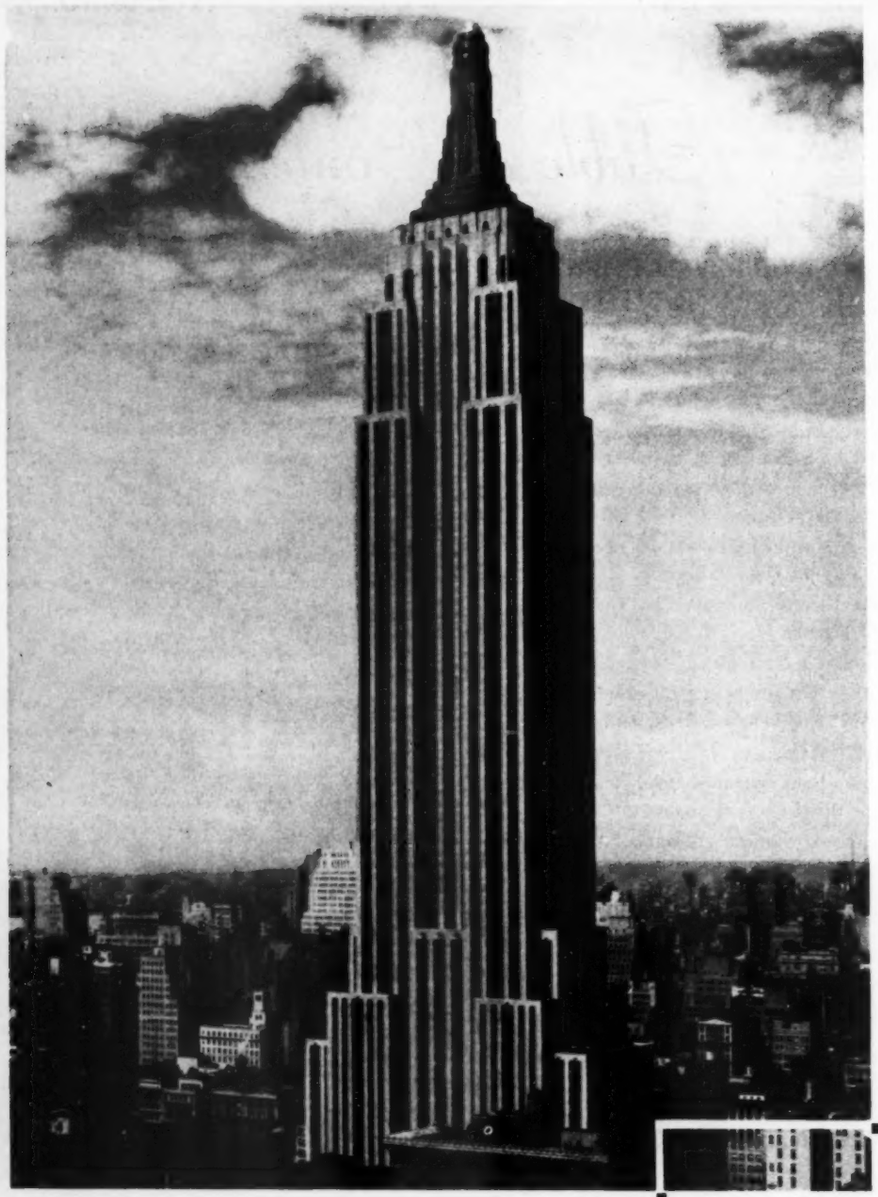

When the architect's plans for this towering mass of steel and concrete were placed in the builder's hands, they were accompanied by one predominant "must" . . . the structure ***must*** be permanent! Without permanency, the enterprise would fail.

How true this is in drilling an oil well! To be profitable, it must be permanent, and to be permanent, it must be successfully cemented . . . and the cement job should last for the lifetime of the well.

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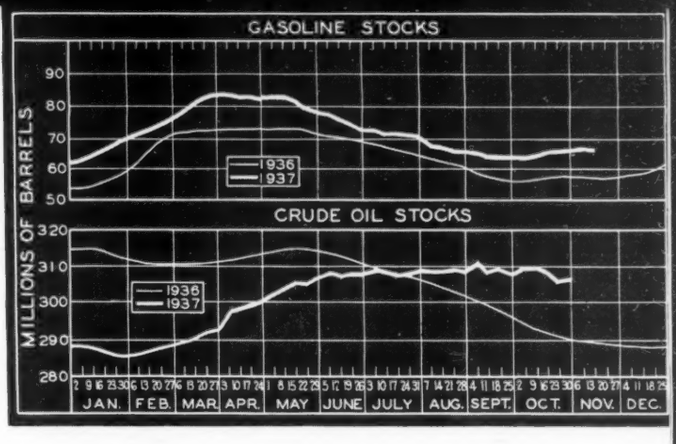


Large Cut in Texas Production

A DETERMINED effort on the part of proration bodies in several states to prevent the unneeded and wasteful production of crude oil within their boundaries appeared the first of the week to be accomplishing its immediate objective. If projected curtailments are carried out there will be further reductions in national crude output over the balance of the month with supplies less than the Bureau of Mines estimated demand for the first time this year.

CRUDE PRODUCTION *3,547,122 barrels daily average—up 9,919 barrels.*

CRUDE STOCKS *307,140,000 barrels as of October 23—up 584,000 barrels.*

GASOLINE STOCKS *67,035,000 barrels as of November 13—down 236,000 barrels.*

REFINERY RUNS *3,335,000 barrels daily week of November 13—up 10,000.*

The actions taken over the past week and planned for December are in the nature of emergency measures brought about in part by an admittedly weak refined market. The latter situation has been further emphasized by additional declines in prices for gasoline and residual fuels during the week.

Market students state that the weakness in refinery markets is due to the long period of excess crude oil production and refinery operations earlier in the year. To this situation has been added the change in business conditions which has resulted in a slackening in the demand for heavy fuels and the fear—largely unjustified—that the seasonal decline in motor fuel requirements will be more than expected. It is hoped that a correction in the crude situation will be quickly reflected in refinery operations and existing uneasiness regarding market trends ended.

The most important action of the week was that of Texas Railroad Commission in reducing the state's allowables 68,886 barrels daily effective November 16. This figure does not include the reduction of about 65,000 barrels daily which will result in the Sunday shutdowns scheduled for East Texas field starting November 21.

The Bureau of Mines released the following daily estimates of crude oil requirements for December: Texas, 1,399,800 barrels; Oklahoma, 588,800 barrels; Louisiana, 244,000 barrels; Kansas, 186,000 barrels; New Mexico, 104,100 barrels; United States, 3,491,300 barrels. These schedules are only one-half to 2 per cent under the November recommendations and indicate that the crude and refined product demand will continue heavy next month with a gain of about 10 per cent over the same month last year.

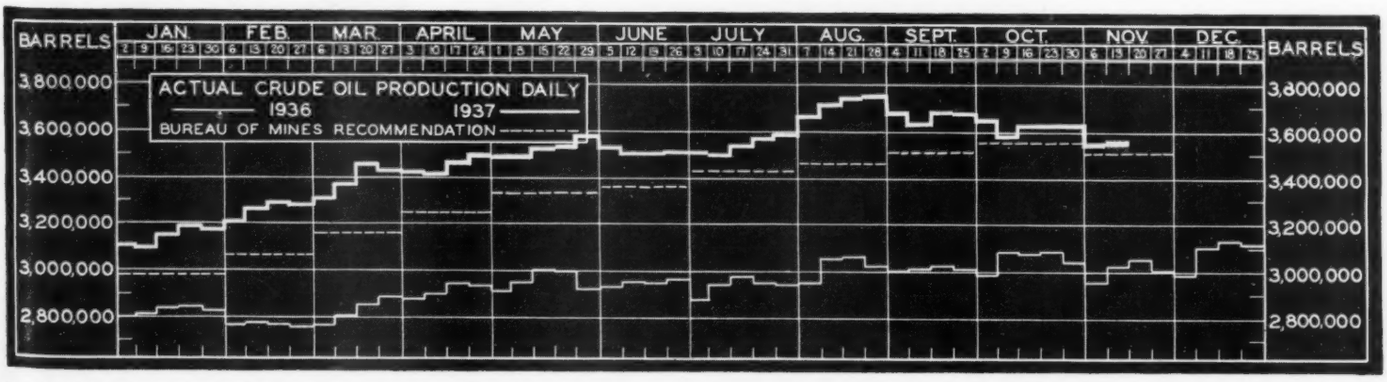
In refinery and wholesale markets, gasoline price declines spread with reductions of three-fourths cent per gallon in Standard of New Jersey and Louisiana market territories. Mid-Continent and Middle West tankcar gasoline prices are also fractionally lower.

Colder weather has brought a consumer demand for the overhead distillates used as furnace fuels and they are the strongest product of the refinery market.

Daily Average Production for Week

	Nov. 13 1937	Bur. Mines Nov. est.	Nov. state allowables	Nov. 6 1937
Oklahoma City	114,050			147,325
Fitts	79,425			69,650
Remainder of state	363,100			365,400
Total Oklahoma	556,575	598,000	575,000	582,375
East Texas	485,748			484,897
West Texas	203,400			206,547
North Central Texas	108,398			108,250
Texas Panhandle	70,850			67,100
East Central Texas	109,849			109,698
Gulf Coast Texas	337,800			338,550
Southwest Texas	113,599			112,050
Total Texas	1,429,644	1,413,300	1,387,677	1,427,092
North Louisiana	70,100			68,400
Gulf Coast Louisiana	169,349			167,250
Total Louisiana	239,449	246,200	253,150	235,650
California	710,150	674,600	674,600	692,200
Kansas	193,300	189,700	180,215	174,225
Arkansas	44,145	33,100		47,775
Eastern fields	131,300	124,000		131,500
Michigan	56,069	47,400		55,146
New Mexico	104,890	104,800	104,800	104,860
Rocky Mountain area	81,600	77,900		86,380
Total United States	3,547,122	3,509,000		3,537,203

Increase 9,919 bbls. daily.



SPARKS FROM THE NEWS

COMEBACK

Neosho Falls in Woodson County, Kansas, had its first oil activity in the early nineties. Now it is "enjoying" a townsite drilling campaign and four new oil pools recently have been opened within a few miles of the village.

MISSING LINK

To the lay mind dismissal of the charges against trade publications is a major development in the Madison case. The government now alleges a conspiracy to control prices but concedes that it has failed to make a case against the pricing media.

MORE LIGHT

An observer says that export sale of 290,000,000 gallons of kerosene and 175,000,000 pounds of candle wax the first nine months should help foreign consumers to see where they are going politically. The comeback is that the home supply should not be depleted.

NORMAL

Last week's drilling report from Illinois substantiates the predictions of many geologists that there will be a large number of failures as well as successes in outlining the new pools of the basin area.

UNIVERSAL

A.P.I. annual meeting is great cure-all for self-pity. It came as a shock to a Mid-Continent independent producer to find out that a sales manager in New York also has problems.

CURTAILMENT

A sit-down strike in the Oklahoma City field is said to have been responsible for Oklahoma's drop in production the past week.

DANGER

Representatives of other industries which have had a precipitous decline in demand for their products are inclined to weep on the shoulders of oil men. There is danger that these oil men, in exaggerated sympathy and for no reason at all, will also start weeping.

GIANT ON RAILS

This week a 5,400-horsepower diesel locomotive starts scheduled runs in the Middle West. Pulling a large passenger train it will consume 115 barrels of oil traveling between Chicago and Denver. This represents progress in railroading and in oil marketing.

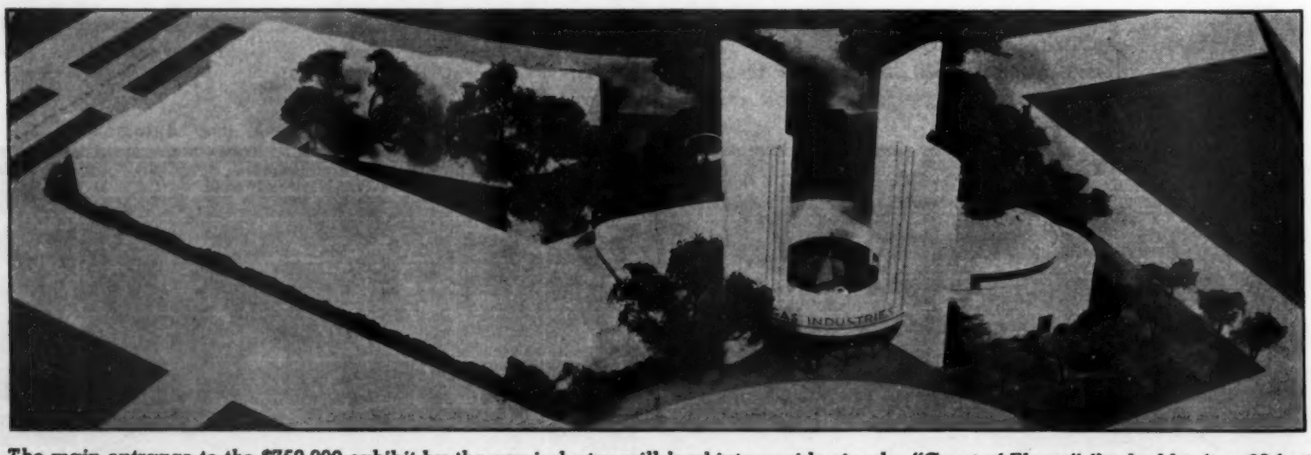
VINDICATION

The engineer who first discovered bottom-hole pressures started a lot of arguments. He now makes a major addition to his list with the East Texas Sunday shutdowns.

HINDSIGHT

It is pointed out that if the present zeal for keeping supply and demand in balance through curtailments had been displayed earlier in the year, it would have served as a preventive instead of a cure as is now the case which recalls "An ounce of prevention is worth a pound of cure."

FLAMBEAU FOR THE WORLD FAIR AT NEW YORK



The main entrance to the $750,000 exhibit by the gas industry will lead into a wide circular "Court of Flame" flanked by four 90-foot pylons

Present Status of Development in Eastern Colorado

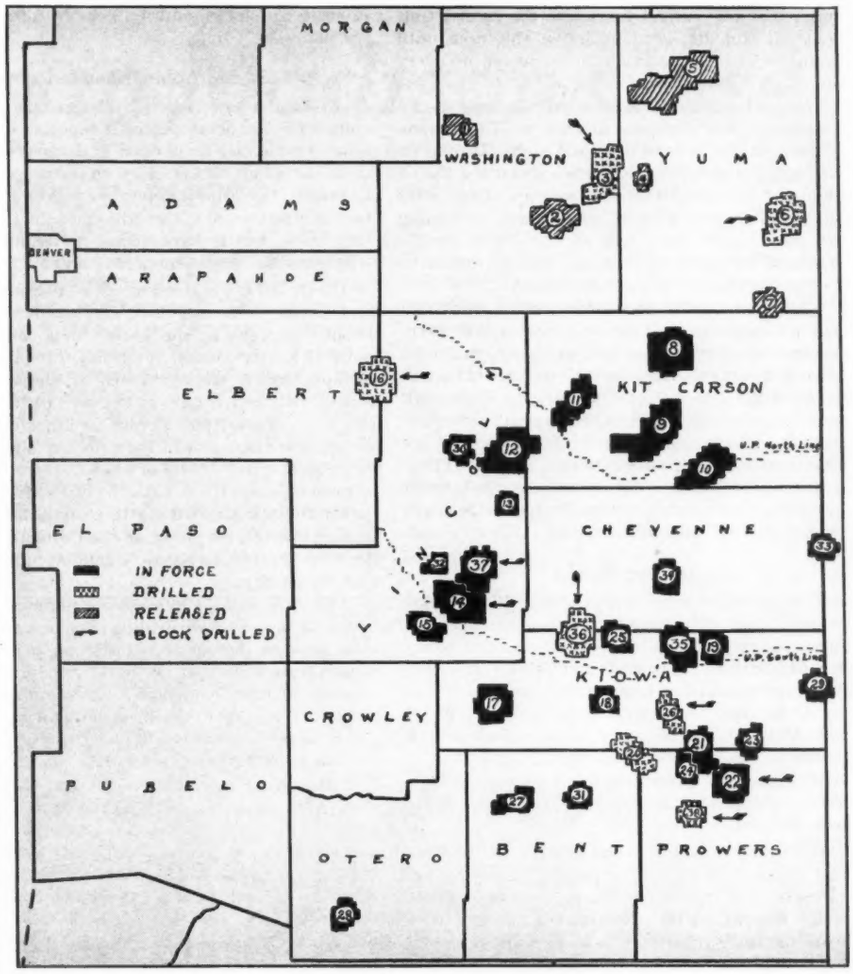
By RUSSELL H. VOLK
General Manager, Plains Exploration Co.

With the great oil development in western Kansas pushing westward at a rapid rate it is interesting to note the developments in eastern Colorado during the past several years. The discovery of commercial oil in this area would have the immediate effect of opening for active development the entire Plains area from Wichita to Denver.

The western Kansas and eastern Colorado plays started as independent developments in 1934. Since that time 116 new oil fields have been discovered in western Kansas in the drilling of approximately 1,000 wildcat wells with an average of about one discovery to every eight test wells drilled. Commercial production has been extended westward in Kansas to the Shallow Water field in Scott County just 60 miles east of the Colorado line.

In 1936 an extensive land play on the part of the major companies and several independents in the extreme western part of Kansas bridged the gap between the eastern Colorado and western Kansas developments, uniting the whole of the Plains area from a standpoint of an immediate prospecting territory. It is a question whether the production in Kansas will extend westward and eventually cross the Colorado border or if production will be discovered first in eastern Colorado and the development move eastward to join with Kansas.

Since 1935 eastern Colorado has been the scene of one of the great land plays on the part of the major companies in recent years. Thirty-eight prospective drilling blocks were assembled and over 5,000,000 acres placed under lease. Extensive seismic, geological and core drilling surveys were carried out by many of the companies throughout the area.



Lease blocks in eastern Colorado

Deep Tests

However, this great investment in the oil possibilities of eastern Colorado to the present time has brought about the drilling of only seven deep test wells since 1933. Six of these tests were drilled through the Paleozoic section and the seventh was a Cretaceous test only. The eighth test is now being drilled.

Although the six completed Paleozoic tests failed to secure commercial production, they did encounter numerous showings of oil and gas and have given the first real information available on the section in eastern Colorado. Two of the tests, namely, Hyde and Beecher Island, were drilled on reflection seismic structures. The Galatea test was drilled on a refraction seismic structure. The Big Bend test was on a core drilled structure and the Nee-No-She test on surface indications.

Attention should be called to the fact that even though six Paleozoic tests have been completed not one of the tests was made in the heart of the eastern central Colorado area. There remains in eastern Colorado an area from the Hyde test in Washington County to the Galatea test in Cheyenne County a distance of 93 miles north and south and from the Kansas border to the western border of Lincoln County a distance of 91 miles east and west covering an area of 8,500 square miles without a single deep test well.

It can be readily understood from this fact that eastern Colorado is still in its very infancy of development with little known of the potentialities of the area. A limited knowledge in certain local areas has been gained on the section but the whole of the area remains as an untested quantity.

Eastern Colorado will require the drilling of at least 50 well located and diversified tests through the Paleozoic before the necessary information on section, areas of likely production, types of structures to be drilled, porosities of formations, and other necessary factors before any intelligent opinion can be advanced on the possibilities of this vast area.

No.	Name—	Acreage	Company:	Status:
1	Rago	10,000	Plains	Released
2	Denova	32,000	I.T.I.O.	Released
3	Hyde	38,000	I.T.I.O.	Drilled
4	Yuma	4,000	Carter	Released
5	Eckley	60,000	I.T.I.O.	Released
6	Beecher Island	27,000	I.T.I.O.	Drilled
7	Idalia	12,000	I.T.I.O.	Released
8	North Stratton	42,000	Gulf	In force
9	South Stratton	30,000	Gulf	In force
10	Smokey Hill	28,000	Carter	In force
11	Flagler	24,000	Winegar	In force
12	Hugo	32,000	Plains	In force
13	Boyero	8,000	Carter	In force
14	Karval	30,000	Carter	In force
15	Forder	18,000	Carter	In force
16	Limon	30,000	Ramsey	Drilled
17	Arlington	22,000	Ohio	In force
18	South Fergus	10,000	I.T.I.O.	In force
19	Brandon	16,000	Gulf	In force
20	Big Bend	24,000	I.T.I.O.	Drilled
21	Chivington	18,000	Gulf	In force
22	Cottonwood	21.000	Continental	In force
23	Arden	10,000	I.T.I.O.	In force
24	May Valley	9,000	I.T.I.O.	In force
25	North Fergus	20,000	I.T.I.O.	In force
26	Nee-no-she	11,000	Moran-Flynn	Drilled
27	Melina	8,000	Carter	In force
28	Timpas	10,000	Carter	In force
29	Towner	13,000	Stanolind	In force
30	Clifford	10,000	Carter	In force
31	Beethurst	9,000	Carter	In force
32	Amy	11,000	Carter	In force
33	Weskan	12,000	Stanolind	In force
34	Arena	26,000	Gulf	In force
35	North Eads	40,000	Gulf	In force
36	Galatea	30,000	Gulf	Drilled
37	Rush Creek	28,000	Gulf	In force
38	Lamar	18,000	Trojan	Drilled

Of the 38 prospective drilling blocks assembled in eastern Colorado as shown on the accompanying map seven have been tested by the drilling of deep test wells. Five of the blocks have been released leaving 26 blocks in force at this time. Several new drilling blocks are now in the making in Cheyenne County on the part of the Gulf.

Brief information on the participation of the

various companies in the eastern Colorado play, also on the blocks and the wells drilled, follows:

Gulf Oil Corp. is recognized as the backbone of the oil play in eastern Colorado. It already has a large investment in the area and is continuing its exploration and leasing on a long range program that will extend years into the future. Gulf will not stop its development of this area until commercial oil production is discovered or every practical means for obtaining same is exhausted. It entered eastern Colorado in 1929 taking two blocks in the Stratton district of Kit Carson County on the basis of magnetic highs. It then remained dormant until 1935 when it startled the oil industry by contracting for over a million acres of Union Pacific mineral rights lands extending 20 miles north and south of the Union Pacific Railroad and running from the Kansas border to the western border of Lincoln County.

Gulf has carried on both extensive refraction and reflection seismic surveys, which will eventually cover every square mile of the Union Pacific area and extend many miles to the north and south of the Union Pacific boundaries. This work was started in 1935 and to the present time Gulf has covered the central parts of northern Kiowa and southern Cheyenne counties, western Cheyenne and northeastern Kiowa and eastern Lincoln counties. Its crews are now surveying in the south central part of Kit Carson County.

Drilling Blocks

Gulf has taken seven prospective drilling blocks, namely, North Stratton and South Stratton in Kit Carson County; Arena in Cheyenne County; Brandon, Chivington, North Eads and Galatea in Kiowa County and Rush Creek in Lincoln County. It has drilled one deep test to granite on the Galatea block and at the present time is drilling a deep test to granite on the Rush Creek block in Lincon County. All the above blocks are in force, except Galatea, which was released after the drilling of the recent deep test well.

Gulf made substantial contributions to the Indian Territory Illuminating Oil Co. on the recent Big Bend test and also to Morgan, Flynn & Cobb on the Nee-No-She test. The Gulf policy has been to substantially contribute to any qualified test in the east central Colorado area.

The Indian Territory Illuminating Oil Co. entered eastern Colorado in 1934 and was largely responsible for starting the oil development in this area. During the years of 1934, 1935 and 1936 it carried on extensive reflection seismic surveys in Yuma, Washington, Kit Carson, Lincoln and northern Cheyenne counties and extensive core drilling surveys in Kiowa, northern Bent and northern Prowers counties.

During these years it leased 10 prospective drilling blocks, namely, De Nova, and Hyde in Washington County; Eckley, Beecher Island and Idalia in Yuma County; North Fergus, South Fergus and Arden in Kiowa County; Big Bend in Bent County and Max Valley in Prowers County.

In 1936 it drilled two deep test wells to granite on the Beecher Island and Hyde blocks and in 1937 it drilled a deep test to the Arbuckle lime on the Big Bend block in Bent County. Due to the failure of the Beecher Island and Hyde tests to give an encouraging section or shows of oil I.T.I.O. subsequently released the De Nova, Eckley and Idalia blocks, which it had taken in this northern district.

I.T.I.O. has in force at present the North Fergus, South Fergus, Arden and May Valley blocks. The North Fergus block will probably be released when rentals fall due for the reason of the deep test dry hole by Gulf completed in February, 1937, on the Galatea block, which joins the North Fergus block on the west. The South Fergus block may also be released on next rental paying dates for reason of the deep test dry hole on the Big Bend a short distance to the southeast. The May Valley and Arden blocks will undoubtedly be kept in force pending the outcome of a deep test well by Continental on the Cottonwood block. Protection acreage held by I.T.I.O. on other major company blocks in eastern Colorado will be kept in force at least for the present time.

Stratigraphic Knowledge

I.T.I.O. has made its play in eastern Colorado and no further development is expected by it until after commercial production is discovered in this area. Although I.T.I.O. failed to secure production in eastern Colorado it deserves considerable credit for the effort made in the drilling of the three deep test wells, which have added materially to the stratigraphic knowledge of this area.

Carter Oil Co. entered eastern Colorado in 1935 and during 1935 and 1936 carried on extensive seismic surveys in the entire area of the play north of Kiowa County. It has taken 10 prospective drilling blocks, namely: Yuma in Yuma County; Smoky Hill in Kit Carson County; Clifford, Boyero, Amy, Karval and Forder in Lincoln County, Melina and Beethurst in Bent County and Timpas in Otero County. All these blocks remain in force at present, except the Yuma block, which was released following the Hyde test. It is interesting to note the concentration of the Carter blocks on the west flank of the Sierra Grande Arch in eastern Lincoln County.

All Carter acreage in eastern Colorado has been taken on prospective drilling blocks and to the knowledge of the writer not a single acre of protection leases has been secured by it in a general area or on other companies' blocks. Carter has not taken any new blocks during the past year and its policy seems to be to play the present block it holds pending developments in the area.

Carter contributed half the cost of the drilling the I.T.I.O. Hyde test in Washington County and is contributing a large portion of the cost of the present Rush Creek test by Gulf as this test is a joint operation for testing both the Karval block of the Carter and the Rush Creek block of Gulf in Lincoln County.

Texas Co. during 1934, 1935 and 1936 secured nearly 600,000 acres of protection leases checkerboarded in virtually every township in the whole of eastern Colorado. With all this acreage it did not secure a single drilling block. All this acreage remains in force except in the limited local areas disproven by the subsequent drilling of deep test wells.

Texas Co. policy has been to ride the development in every part of the area, but this policy seems to have been liberalized to the extent it is now willing to contribute its proportionate share to any qualified test. Although it has not taken any new leases recently it is actively interested in the area.

Continental Oil Co. owns the Cottonwood block in northern Prowers County. From a standpoint of structure this block is considered the foremost prospective possibility known in eastern Colorado. The announcement of a deep test well on this block has been expected daily for over two years and from recent statements of Continental officials this test will be drilled shortly. Besides Cottonwood, Continental owns extensive protection acreage throughout eastern Colorado which it has kept in force and it remains slightly active in the area.

Stanolind Oil & Gas Co. in 1936 secured two prospective drilling blocks, namely, Weskan in Cheyenne County and Towner in Kiowa County. Both of these blocks are on the Kansas border and are in force. Besides these two blocks it has extensive protection acreage throughout eastern Colorado. It has not taken any new leases or been active in the area for some time.

The California Co. during 1935, 1936 and 1937 has taken extensive protection acreage in Kiowa and northern Bent and northern Prowers counties. It has concentrated large holdings south of Eads which come close to the classification of a prospective drilling block. It is continuing to take new leases of merit and is spreading its protection holdings to Lincoln, Kit Carson and Cheyenne counties. It made a substantial contribution to I.T.I.O. on the recent Big Bend test in Bent County.

Ohio Oil Co. in 1935 leased a large prospective drilling block, namely, Arlington in Kiowa County, which it has kept in force. It has extensive protection leases throughout eastern Colorado but has not been active in the play for over a year.

Magnolia Petroleum Co. during 1934, 1935 and 1936 secured extensive protection acreage throughout eastern Colorado. It also contributed to Morgan, Flynn & Cobb towards the drilling of the Nee-No-Shee test. It is not at the present time active in the play.

Plains Exploration Co. secured two prospective drilling blocks in 1935, namely, Rago in Washington County and Hugo in Lincoln County. The Rago block was released in 1936 after detailed seismic survey failed to disclose sufficient structure to justify a test well. The Hugo block was also shot in 1936 by detailed seismic survey and except for a few of the edge leases has been kept in force. Plains will continue to be active in the eastern Colorado play.

Morgan, Flynn & Cobb in 1935 secured the Nee-No-She block in Kiowa County and subsequently in 1937 drilled a 5,540-foot deep test well into the Arbuckle lime on the block. It is doubtful if it will continue with any active interest in eastern Colorado unless its present deep test in Logan County, Kansas, should be completed as a producer.

Winegar and others in 1935 secured the Flagler block in Kit Carson County. In 1936 a drilling contract was entered into with H. V. Elwell of Wichita, Kans., and location announced for an 8,000-foot deep test well on the SE SW section 20-9s-50w. Failure of two major companies to make their expected proportionate contributions to the test caused several delays and finally the location was abandoned for the present. The block has been kept in force.

Ramsey Oil Co. in 1935 secured a large drilling block, namely, Limon in Elbert and Lincoln counties on which it subsequently drilled a 6,000-foot Cretaceous deep test well. It also secured extensive lease holdings in Cheyenne County, but these are apparently all being released as rental dates fall due. Its policy seems to be one of withdrawal from the Colorado play.

Deep Tests Drilled in Eastern Colorado

1. Trojan Oil & Gas Co. No. 1 Lotus, C NW NE NE section 15-23s-46w, Lamar block No. 38, Prowers County, Colorado. Spudded in April 22, 1933, and completed December 16, 1935, at total depth of 5,913 feet. Surface elevation 3,650 feet. Top of Dakota 245 feet; top of Pennsylvanian 2,711 feet; top of Mississippian 5,161 feet, top of Ordovician 5,326 feet; top of Arbuckle lime 5,551 feet. Numerous showings of oil and gas were encountered in both the Pennsylvanian and Mississippian sections.

2. Ramsey Petroleum Co. No. 1 Union Pacific, C NE NE SE section 13-8s-57w, Limon block No. 16, Elbert County, Colorado. Spudded in November 22, 1935, and completed January 30, 1936, in top of Morrison at 6,004 feet. Surface elevation was 5,698 feet. Top of Muddy sand 5,351 feet; top of Dakota 5,423 feet; Muddy sand was dry and Dakota carried water.

3. I.T.I.O. No. 1 Strangway, C NW SW section 21-2s-43w, Beecher Island block No. 6, Yuma County, Colorado. Spudded in May 21, 1936, and completed September 18, 1936, in granite at 5,595 feet,

(Continued on Page 32)

Defense Attacks Procedure of Prosecution in Madison Case

By R. B. PYRE

MADISON, Wis., Nov. 16.—Arguments continued on defense motions in the oil trial today following completion of the government's case and dismissal of eight defendants.

Frederick Wood, counsel for Sinclair Refining Co., argued if any price fixing conspiracy existed it must have been "hatched" at the meeting of major representatives and refiners in St. Louis March 5, 1935, and the entire record may be searched without disclosing that any agreement to fix prices or pay uniform prices was even discussed there, he said.

"All evidence points to the fact that the entire program was voluntary, not compulsory, and nobody was committed to anything," Wood declared.

Naturally, he asserted, the decision to pay fair prices rather than distress prices provoked a discussion of what constituted a fair price and the stabilizing committee held weekly meetings to discuss a "fair price." "There is no evidence that they had such authority, but they did it and I can see nothing wrong or criminal about it," Wood declared.

The government's own charts show a lack of uniformity in prices paid by different companies for gasoline, he claimed.

Before closing its case, the government voluntarily moved dismissal of seven of the defendants, including the three indicted journals and four oil companies. The court granted the motion, overruling objections of defense attorneys who asked that the trial continue and that the jury be instructed to bring verdicts of not guilty. This was done to obviate possibility of second jeopardy, but the court voiced assurance there would be no double jeopardy. Judge Stone declared no competent evidence had been offered to support a finding of guilty as to the publications.

The defendant oil companies dismissed were: Tide Water Associated Oil Co., of Delaware; Deep Rock Oil Corp., of Delaware; Louisiana Oil Refining Corp., of Virginia; and Cities Service Export Oil Co., of Delaware.

The prosecution was convinced, Attorney Chaffetz said, that Tide Water Associated, as a parent company, was not involved in activities attributed to Tide Water Oil Co., and Deep Rock was not legally liable because it was in the hands of a trustee. Louisiana Oil Refining and Cities Service Export were dismissed on grounds of nonliability growing out of dissolution or merger proceedings.

The defense, which earlier in the trial succeeded in forcing withdrawal of two price comparison charts prepared by W. J. Miller, special agent in the Bureau of Investigation, again charged flaws in Miller's computations when he was recalled to present a complete tabulation and price analysis of 19,181 tankcars of gasoline purchased by defendant companies from independent refiners during 14 months in 1935 and 1936.

The prosecution has contended the prices paid by the majors set the price for the entire spot market and were followed or reflected simultaneously by quotations in the defendant journals. The defense has contended the majors followed the market instead of setting the pace.

Walter P. Jacobi and Neil Buckley, alleged contact men respectively in the Mid-Continent and East Texas fields, and J. M. Bradshaw, commission buyer who made many purchases for Gulf Co., all had testified they bought frequently at prices below the low or at the low of the published market.

The purchases tabulated by Miller did not include those of Sinclair Refining Co., said to total approximately half of the total bought by the major companies in the Mid-Continent. These were not included because the accounting staff did not have time to get at the "two truckloads or more" of Sinclair purchase orders and invoices impounded.

Omission of the Sinclair figures threatened a week's delay when Frederick Wood, attorney for the company, objected to submission of any computations not offered before the government closed its case, and Miller said it would take that long to tabulate them. Judge Stone declared the entire "two or more truckloads" would be brought into court if necessary and made part of the record, but defense counsel concluded they were not necessary.

Arthur M. Vinje

Federal courtroom at Madison. Attorneys occupy space in front of bench. Jury box to right. Defendants are seated on left and also use benches for visitors not shown in view. Desks in foreground are for the press. Paintings on walls are predecessors of Judge Patrick T. Stone, presiding judge

The computations covered purchases of 19 companies other than Sinclair, the list given including Barnsdall, Cities Service, Empire, Louisiana Oil, Continental, Globe (three companies), Gulf, Mid-Continent, Phillips, Pure, Socony-Vacuum, Wadhams, Shell, Skelly, Tide Water, Texas and Standard of Indiana.

Miller declared 8,797 carloads were bought in East Texas between March, 1935, and April, 1936, including purchases from members of the East Texas Refiners Marketing Association and other independents, and 11,384 cars in the Mid-Continent.

Of the East Texas purchases, he said, 7,492 cars were bought at "specific prices," including 5,430 at the low of the Oilgram and 39 at one-eighth of a cent above the low. The purchases "at the low or above the low," Miller stated, amounted to 73 per cent of the total, and when Col. Donovan demanded he "break down" this percentage he added 72.5 per cent were at the low and .5 of one per cent above the low. Comparison with Journal of Commerce quotations showed relatively similar results, allowing for a freight differential.

Miller said that of 9,204 cars bought at specific prices in the Mid-Continent, 77.7 were purchased "at the low or higher," 69.6 being at the low.

The accountant presented comparisons of prices paid by Bradshaw for 3,535 cars purchased for Gulf Co., of which, he said, 2,214, or 62 per cent, were bought through the East Texas Refiners Association which the government says was organized primarily to "facilitate" sales to majors.

Col. Donovan demanded withdrawal of all

Miller's tabulation exhibits on the ground the computations were improper. He charged Miller had included purchases that were not spot transactions.

Chaffetz retorted the defendants were "trying to get out of this case on a technicality," and Col. Donovan demanded Chaffetz be reprimanded for the remark.

The court, however, ordered the jury to disregard everything that had been said, declaring, "I'm going to receive this exhibit for just what it's worth, and for the jury to give whatever weight it chooses."

Testing Witness

Donovan searched into phases of the oil business which Miller admitted were beyond his knowledge before demanding the accountant's testimony be stricken.

Miller's comparisons had been made on the basis of quotations in the Oilgram, which defines spot purchases as sales made for delivery within 15 days. He had testified that in tabulating third grade and regular gasoline purchases from the impounded purchase orders and invoices, he had classified all gasoline below 62 octane, together with U. S. Motor and various recognized brands as third grade.

"Did you take into consideration gravity test, gum content or vapor pressure?" Donovan inquired.

"No, sir," Miller answered.

"When gasoline was sold above the low isn't it a fact that these specifications were more rigid?"

"I'm afraid I can't answer that," Miller said.

"Weren't many of those shipments made more than 15 days after the purchase order?" Col. Donovan continued.

Miller answered, "No; most of them were made within 15 days."

Donovan then showed through Miller's work sheets, that numerous sales were made for shipment 15 to 30 days after the day of the order.

Chaffetz argued that all the purchases classified by Miller were "in the nature of spot transactions at the very least," but Donovan was equally insistent the government, having chosen the Oilgram as its basis of comparison, was bound by its definition.

If the computations were made properly, he claimed, they would show that the prices paid followed the market and that the major companies did not "set the pace."

Counsel for individual companies made further challenges of Miller's figures, including H. C. Walker of Louisiana Oil, who declared all of the 708 cars listed as having been purchased by that company in the Mid-Continent field were bought in Arkansas, and if a comparison were made with Arkansas market quotations it would show the great bulk of the purchases were made at prices below the low.

He showed further that while some companies are charged in the indictment with participating in "pool" purchasing in the Mid-Continent and others in East Texas, the computations included purchases by companies not charged with buying in the Mid-Continent field. Judge Stone reserved his ruling on a motion to exclude all such purchases from the computations.

W. A. P. Morgan charged the figures did not state facts as to Texas Co., and Ralph Horween claimed they were misleading as to Globe companies, while a sample purchase order, produced at the insistence of Judge J. C. Denton, did not show whether the Mid-Continent Petroleum Corp., which made the purchase, was the Delaware or the Kentucky corporation.

Denton agreed to waive further cross-examination rather than delay the trial when it was agreed his contention might be used in argument and Walker consented to withdraw his objection under a stipulation that a computation would show Arkansas quotations are uniformly one-half to three-fourths of a cent higher than Tulsa market prices.

The case was recessed over the week-end to give counsel opportunity for preparation of individual motions for verdicts of acquittal, after the government had rested on Friday and after Col. Donovan had renewed his motion for admission of the petroleum code and order. The court, as on previous occasions, denied the motion temporarily, while taking judicial notice of the code for purposes of argument and leaving the door open for its resubmission in support of the defense contention that "stabilization" activities of the defendants had government sanction.

"The code is necessarily in the government's case by reason of the evidence offered," Donovan contended, pointing to testimony regarding "refinery allocations," committees appointed under the code and the government's introduction of major company contracts with jobbers. These contracts recite in their terms they are subject to the fair practice code, Donovan declared, but Chaffetz claimed they were offered only in relation to "relevant issues," while Government Attorney Crawford declared there has been no showing that either the code or the executive order has "anything to do with this lawsuit."

Apart from the closing developments the week's testimony was devoted largely to attempts by the government to connect the presidents of defendant companies and other officials not previously identified with the alleged "pool" activities either by documentary or oral evidence. Witnesses called for identifying such men as Henry M. Dawes, president, Pure Oil; E. G. Seubert, Standard of Indiana; Dan Moran, Continental; W. S. S. Rodgers, Texas Co.; W. G. Skelly, Skelly Oil Co., and Frank Phillips, Phillips Petroleum, were utilized by the defense to bring out that major companies have bought gasoline in the open market over a period of years to supplement their own production and to "build up inventories."

Identifying Executives

Subordinate officials of these companies were put on the stand to testify these company executives were "active" in directing the policies of their corporations. Four such witnesses were Francis B. Hopp, Tulsa, secretary, Skelly Oil Co.; L. S. Wescoat, Chicago, vice president and secretary, Pure Oil Co.; Charles J. Barkdull, Evanston, Ill., executive vice president, Standard Oil of Indiana, and George G. Brownell, Westfield, N. J., director of Cities Service Co., who testified as to the official connections of Harry D. Frueauff, F. R. Coates and H. E. Brandli.

Wescoat declared Mr. Dawes was less active in the affairs of Pure Oil Co. during 1935 than prior to 1933, when he became a member of the planning and coordination committee under the code and spent most of his time in Washington until June, 1935.

Hopp, Wescoat and Barkdull all explained the necessity of keeping stocks of gasoline on hand in excess of immediate requirements. Hopp said his company had purchased from independent refiners for many years, even when its production exceeded sales, and that it was particularly customary to build up inventories in the winter to take care of summer demand.

Wescoat said purchases by Pure Oil from independents mentioned were minor in comparison with purchases from other sources, including gasoline bought under long-time processing contracts. Explaining the necessity of building inventory, he said a large portion of a company's stock is always frozen, and not immediately available to the market, some being in transit on ships and in cars while another important factor is the condensed water that accumulates in the bottom of storage tanks, making it inadvisable to draw down the contents of the tanks "below the swing line."

Barkdull said the trend of tankcar prices naturally was of vital importance to the company, but he "wouldn't know" whether or not President Seubert knew of the company's participation in any buying program that "might affect that trend."

Chaffetz asked if E. J. Bullock, vice president in charge of sales, could engage in any such program without President Seubert's knowledge.

"I don't think he could, logically," Barkdull replied.

"You don't think Mr. Bullock would commit any crime with or without consulting Mr. Seubert, do you?" asked Weymouth Kirkland, counsel for Standard Oil.

The answer was blocked by a government objection, though Kirkland insisted the question was "perfectly simple."

"That's exactly what we're charged with," he reminded the court.

Barkdull said he knew of no buying authority given to Ira Smith, representative of Bullock's department in Tulsa.

"Did he ever say anything from which you knew he was engaged in any buying program contrary to law?" Kirkland inquired.

"No, sir," Barkdull answered, nor did he ever hear Bullock discuss any "program."

Mid-Continent Purchases

Barkdull showed the company purchased 1,230 cars of gasoline in the Mid-Continent field during 1934, the year before the alleged conspiracy started, while 795 cars, little more than a day's supply, were purchased from independent refiners in 1935.

The company's own production, he testified, averages about 600 cars a day. It purchased to keep up its inventories, as it was necessary, in winter time, to anticipate peaks of high consumption, and it never, during 1935, reached the total of 5,500,000 bbls. of stock on hand which it considered necessary to maintain its position.

He denied that his company ever conferred with other companies in regard to prices, declaring Indiana, as the "market leader," posted prices in the territory, that others usually, though not always, followed, and that his company, at times, had been forced to revise its prices to meet those of competitors.

Barkdull was the thirty-fifth and last witness, other than Miller, called by the prosecution. Exhibits introduced exceeded 800, and the transcript of the record was over 8,000 pages.

As the prosecution neared the end of its evidence, it became more apparent that its main reliance rests upon documentary rather than oral evidence. The letters and interdepartmental correspondence taken from the files of the various defendant companies contained many phases which the prosecution construed as savoring of the conspiracy it charges. They revealed frequent references to the "buying group," "buying to support the market" and similar expressions.

A final grist of documents taken from the Shell Petroleum Corp.'s files included a "scout letter" reporting that Bell Refining Co., an independent, was preparing to increase production in apparent anticipation of a large buying movement by major companies at "inflated prices." Other letters contained repeated references to a firm market in 1935 resulting from "inter-refinery buying."

General and individual motions were filed Monday on behalf of all defendants remaining in the case, asking directed verdicts of acquittal and demanding that large sections of testimony and documentary evidence be stricken from the record as hearsay.

Colonel Donovan asked that 362 documents submitted by the government be ruled out as a violation of the defendants' constitutional right to confront their authors.

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Sunday Shutdowns in East Texas Field

By NEIL WILLIAMS

AUSTIN, Tex., Nov. 15.—The Railroad Commission late Monday issued orders providing for closing down the East Texas field for four Sundays, beginning November 21, and reducing allowable production for the state, effective November 16, to 1,354,143 bbls.

Based on the current production November 12 of 1,423,029 bbls. as reported by the Railroad Commission at the statewide proration hearing Monday, the new allowable represents a cut of 68,886 bbls.

No change is made in the proration factor (2.32 per cent of the hourly potential) in the East Texas field, but on the basis of the November 16 allowable of 488,045 bbls., the Sunday shutdown for four weeks will reduce the output of that field 1,952,180 bbls. for the period, representing a daily average reduction of 65,073 bbls.

Considering this, total reduction in production for the state amounts to 133,958 bbls. daily. Although a reduction from the current production, the new allowable still is 2,466 bbls. greater than the November 1 basic allowable. It is 45,657 bbls. under the Bureau of Mines estimate of daily market demand for December, 1,399,800 bbls.

Reason for Shutdown

The Sunday shutdown of East Texas was ordered to prevent waste and to enable the Railroad Commission engineering department to carry on a series of bottom-hole pressure tests to determine the most efficient flowing basis for the field. It was stated that for the tests "it is necessary to take bottom-hole pressures under more stable and uniform conditions than heretofore, and for this purpose it will be necessary that all wells be closed in while pressures are being taken."

All wells in the field will be shut in from 7 a.m. each Sunday until 7 a.m. each Monday. The 91 key wells in which the bottom-hole pressure tests will be made will be shut in the preceding 24-hour period in addition to Sunday. It was announced that if the four Sundays prove inadequate for satisfactory determinations, the shutdown may be continued longer.

In the order it was stated that pressure in the East Texas field had dropped 8.2 pounds in the 30-day period ending July 12; 13.71 pounds for the period ending August 12; 12.89 pounds for the period ending September 12; 12.77 pounds for the period ending October 12, an average drop of 11.89 pounds for the period from June 13 to October 12. In the period between October 12 and November 8, pressure increased 12.37 pounds.

Commission engineers were unable to give any reason for the recent increase in bottom-hole pressure. At previous hearings, the respective pressure drops were attributed to increases in fluid withdrawal from the reservoir above the critical point. However, production the past month continued to increase.

Allowable production for the respective districts under the new order compared with November 12 are: Southwest Texas, 234,674 bbls. and 251,967 bbls.; Gulf Coast, 174,807 bbls. and 191,383 bbls.; East Central, 92,414 bbls. and 106,214 bbls.; East Texas, 488,035 bbls. and 485,027 bbls.; West Central, 70,697 bbls. and 72,823 bbls.; West Texas, 162,423 bbls. and 180,583 bbls.; North Texas, 59,995 bbls. and 62,179 bbls.; Panhandle, 68,578 bbls. and 72,853 bbls.

Thompson's Warning

The reduction in allowables did not come without warning. As Col. E. O. Thompson, member of the commission, both prior to and at the proration hearing Monday, has stated that drastic cuts would be made.

Reductions in oil production are necessary if extensive avoidable physical waste of this natural resource is to be prevented, Colonel Thompson declared at the hearing. Due to general seasonal changes and industrial and business conditions at this time, production of oil has jumped way ahead of consumption of gasoline and other oil products, which is resulting in excess oil going into above-ground storage causing preventable waste.

"It is better for us to lock the barn before the horse is gone than to wake up blind to the facts and find millions of barrels of unneeded and unwanted Texas oil on our hands in storage, wasting away and costing Texas millions of dollars," he advised. Great caution and care should be exercised during the next few months in production of oil, he added.

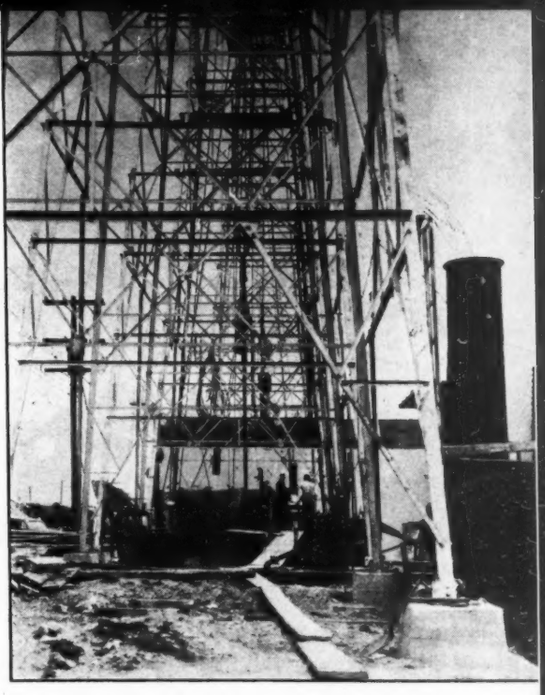
"We thought we had foreseen and discounted this reaction in our order for November when we cut our production far below the Bureau of Mines estimate," Colonel Thompson continued, "But, evidently, we were even too liberal and too optimistic for cold facts. If, however, in additional production cuts we find we have retrenched too greatly, everybody knows we can open the valve ever so little any time."

Recommended by Engineer

Colonel Thompson, in picturing present production conditions, stated that trade journals had called attention to the continuing weak gasoline markets, and that it is pointed out forcibly that one can buy a barrel of East Texas gasoline as cheap as the posted price of a barrel of East Texas crude, indicating a sagging market demand. He revealed that a total of 13,077 new wells has been completed in Texas this year against 10,769 wells for the same period in 1936, and called attention to the increasing stocks.

"Today we have 307,000,000 bbls. of crude in storage against 291,000,000 bbls. a year ago," he said. "A year ago we had 57,000,000 bbls. of gasoline in storage, today we have 67,271,000 bbls."

The shutdown of the East Texas field, first recommended by E. V. Cottingham, chief engineer for the Railroad Commission, did come as a surprise. The proposal met the disapproval of some operators who claimed the shutdown in tending to bring about a redistribution of pressure would result in certain inequities in favor of operators in low pressure areas, and that the loss in production would occasion a tremendous loss to oil companies and the state. It was shown, however, that the increased ultimate recovery to be gained by more efficient production practices which would come from the studies of the commission would more than offset the immediate losses, and would permit greater conservation.



Five wells on a 50-foot lot, half block long, in Kilgore, East Texas. The boiler settings have been permanent and a small 10 by 10 slush pit is used for working mud, while the reserve pit and discharge mud is reached by about one-half mile line laid to the outskirts of the business section

Pipe Line Transportation Tax Committee Appointed

A pipe line transportation tax committee has been appointed by the subcommittee on taxation of the American Petroleum Industries Committee. The new committee is composed of Clayton E. Turney, Texas Co., chairman; Stafford Smith, Socony-Vacuum Oil Co., Inc., and John M. Dressler, Standard Oil Co. of New Jersey. The activities of this committee are in connection with Section 731(a) of the revenue act of 1932, as amended, which imposes a tax of 4 per cent upon the transportation of crude petroleum and liquid products thereof by pipe lines.

The Bureau of Internal Revenue is assessing tax on movements of products which the oil industry generally does not consider as taxable and the latest court decision complicates the situation. The principal objective of the committee is to coordinate the efforts of the various oil companies in attempting to secure (through representations to the bureau, litigation, or otherwise) reasonable intepretations of the taxing statutes. Proper coordination is desirable and necessary to properly present the evidence and viewpoints of the industry in general so taxes may ultimately be paid on movements through lines of pipe which the industry recognizes as being pipe lines, but not paid on movements through lines of pipe that are incidental to other activities and have no relationship to pipe lines.

U. S. Supreme Court Orders Reargument on Laredo Rate

WASHINGTON, D. C.—The Supreme Court has ordered a reargument on December 13 on litigation involving an order of the Texas Railroad Commission requiring United Gas Public Service Co. to reduce its gas rate for Laredo from 75 cents to 55 cents per 1,000 feet. Arguments were heard recently by the court. The court of civil appeals for the third supreme judicial district of Texas upheld the rate reduction.

The company contended the order was confiscatory. The difference in the amount was to be refunded to the consumers. Justice Cardozo signed an order enjoining enforcement of the order pending disposition of the litigation.

EX-GOV. B. B. BROOKS C. L. SUHR GEORGE A. HILL, JR. D. E. BUCHANAN W. H. FERGUSON

Lew Merrell, cartoonist, makes a few random sketches

Need for Adjusting Operations Recognized at A.P.I. Meeting

By C. O. WILLSON

CHICAGO, Nov. 12.—This year's A.P.I. meeting, which closed with group sessions today, proved to be a clearing-house for opinions regarding the present status of oil operations.

In the absence of special developments at the general sessions, reelection of all officers and routine actions by the board of directors, many of the membership got their excitement in informal discussions—often reaching the argumentative stage—as to what the immediate future held in market trends.

In general there was agreement among those coming from all divisions of the industry that present conditions call for more than seasonal curtailments in both crude oil producing and refining operations, with more drastic cuts needed to correct a few local conditions. The more pessimistic views came from those located in eastern and middle western areas, their attitudes in part influenced through proximity to the gloom prevailing in several other industries where declines in demand have brought serious reductions in manufacturing operations and sales.

Well-known economists in attendance at the meeting here continue of the opinion that an increase in demand for motor fuels, overhead distillates and crude oil are assured for 1938. Some estimates of gains in motor fuel demand are lower than they were several weeks ago, but they still point to increases around 5 per cent. These estimates are conservative and anticipate unfavorable trends in general business which prognosticators agree may not materialize.

With the exception of California, information available here from representative operators indicates general weakness in gasoline and residual fuel oils. This situation was emphasized by additional reductions in gasoline tankcar, tank-wagon and posted dealer prices covering large areas announced this week. The price weakness seems to center in a small group of Pennsylvania and East Texas refineries.

A slackening in railway, industrial and marine activities has brought reductions in shipments of residual fuel oils over the remainder of the year. The outlook for this product over the early part of 1938 is not considered favorable at this time. Prices on spot shipments have been lowered and concern is expressed regarding the base prices for next year's contracts.

Market Threat

In the producing end it was apparent that operators realized the threat this weakness in refinery markets offers to the continuance of present posted schedules. Operators stressed the fact that higher operating costs and tax increases mean that lower crude prices, if they become effective, will work a special hardship on many. The remedy suggested was further curtailment in crude production to the end that there would be no further additions to storage in any area with liquidation of those stocks accumulated earlier in the year by buyers who now are seeking additional outlets.

It was contended that the carrying out of such a program would be quickly reflected in refinery operations and any threat to the existing market structure ended. A reduction of 175,000 bbls. daily in crude production was suggested by several familiar with conditions.

Representatives of the proration bodies of the larger oil producing states were present during the week and expressed interest in the views of operators regarding action necessary to maintain stabilized oil conditions within their states and the entire industry. Colonel E. O. Thompson, member of the Texas Railroad Commission announced that the Texas allowable would be reduced 70,000 bbls. November 16 as that state's contribution to the needed reduction in national output.

In Oklahoma, Governor E. W. Marland, referring to the reports from Chicago said "This is the kind of talk that always precedes a cut." He threatened to increase the gross production tax in that state if crude price schedules are reduced.

Aside from the immediate problem of seasonal adjustments in operations, comments of those coming from all parts of the country covered a wide variety of subjects.

A majority of those who keep in touch with proven reserves are of the opinion that the new discoveries this year exceed the record production by a comfortable margin. The new discoveries for the most part are controlled by major operators who do not expect to develop them rapidly.

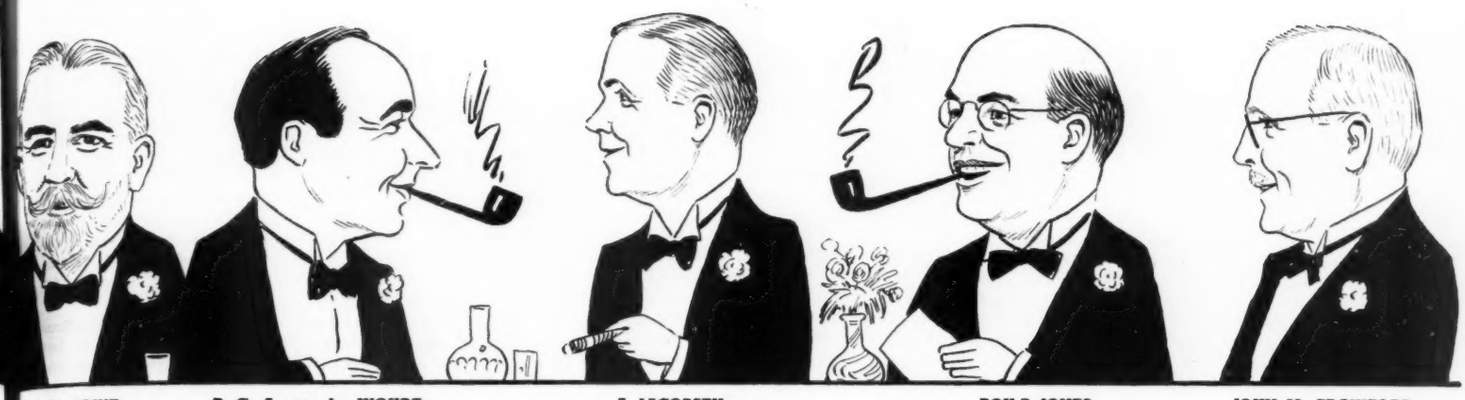
The consumption of overhead distillates used as burning and diesel fuels has expanded, it was contended by several refiners, so that it will have to be taken into consideration in future plant expansion and the demand for crude oil.

California operators conceded that the increased demand for crude oil and refinery products from Japan largely accounts for the fact that the West Coast statistical situation continues in fair shape despite a production of crude oil approaching 700,000 bbls. daily. Any stoppage in the volume of business with the Orient will mean either a curtailment in California operations or increased shipments to East Coast and European markets.

Motor Fuels Committee

President Byles appointed Conger Reynolds, head of the department of public relations of the Standard Oil Co. (Indiana), chairman of Committee on Motor Fuels. This committee will collect technological and economic data concerned with motor fuels. These studies will include substitutes for petroleum fuels.

Arnold Daum has been appointed secretary of the committee. He will be in charge of the committee's headquarters located at 616 South Michigan Avenue, Chicago. Other members of the committee are: D. T. Pierce, Consolidated Oil Corp., New York; P. H. Patchin, Standard Oil Co. of California, San Francisco, Calif.; K. G. Mackenzie, Texas Co., New York; Graham Edgar, Ethyl Gas-



H. E. HOWE R. G. A. van der WOUDE A. JACOBSEN ROY B. JONES JOHN M. CRAWFORD

erican Petroleum Institute directors at annual banquet

oline Corp., New York; Northrop Clarey, Standard Oil Co. of New Jersey, New York; T. D. Peace, Shell Union Oil Corp., New York; W. B. Plummer, Standard Oil Co. (Indiana), Chicago; L. C. Beard, Socony-Vacuum Oil Co., Inc., New York; B. E. Sibley, Continental Oil Co., Ponca City, Okla.; F. A. Howard, Standard Development Co., New York; Gustav Egloff, Universal Oil Products Co., Chicago; G. G. Oberfell, Phillips Petroleum Co., Bartlesville, Okla.; and J. C. Welliver, Sun Oil Co., Philadelphia.

The Institute's board of directors recommended the simplification of the report of the Annual Census of Refineries and Cracking Plants made by the U. S. Bureau of Mines. The new form includes "crude capacity" and "cracked gasoline capacity" and drops data considered of no value.

The semiannual meeting will be held at Wichita, Kans., May 11 to 13, 1938. The 1938 annual meeting will be held at Chicago November 14-18.

Officers Reelected

Axtell J. Byles was elected to serve a fourth term as president. All other officers were reelected. The following will serve during the coming year: Vice President at Large, K. R. Kingsbury, Standard Oil Co. of California, San Francisco, Calif.; Vice President for Production, George A. Hill, Jr., Houston Oil Co. of Texas, Houston, Tex.; Vice President for Refining, W. S. S. Rodgers, Texas Co., New York; Vice President for Marketing, C. E. Arnott, Socony-Vacuum Oil Co., Inc., New York; Treasurer, O. D. Donnell, Ohio Oil Co., Findlay, Ohio; Executive Vice President, W. R. Boyd, Jr., New York; Secretary and Assistant Treasurer, Lacey Walker, New York; and Assistant Secretary, John S. Cooke, New York.

Members of the Executive Committee, also reelected are: F. A. Leovy, Gulf Oil Corp., Pittsburgh, Pa.; J. Howard Pew, Sun Oil Co., Philadelphia, Pa.; E. G. Seubert, Standard Oil Co. (Indiana), Chicago; H. F. Sinclair, Consolidated Oil Corp., New York; W. C. Teagle, Standard Oil Co. of New Jersey, New York; and R. G. A. Van der Woude, Shell Union Oil Corp., New York.

General Committees

Forty members of the General Committee of the Divisions of Production and of Refining were elected by members of the divisions and 10 additional members were appointed by President Byles.

Division of Refining, elected by members: C. R. Barton, Tide Water Associated Oil Co., New York; C. B. Buerger, Gulf Oil Corp. of Pennsylvania, Pittsburgh, Pa.; W. F. Burt, Socony-Vacuum Oil Co., Inc., New York; F. B. Dow, National Petroleum Association, Washington, D. C.; R. W. Hanna, Standard Oil Co. of California, San Francisco, Calif.; G. W. Hanneken, Standard Oil Co. (Ohio), Cleveland, Ohio; C. L. Henderson, Vickers Petroleum Co., Wichita, Kans.; Emby Kaye, Skelly Oil Co., Tulsa; W. F. Lowe, Natural Gasoline Association of America, Tulsa; W. W. Lowe, Cities Service Co., New York; K. G. Mackenzie, Texas Co., New York; T. M. Martin, Lion Oil & Refining Co., El Dorado, Ark.; Walter Miller, Continental Oil Co., Ponca City, Okla.; G. G. Oberfell, Phillips Petroleum Co., Bartlesville, Okla.; M. G. Paulus, Standard Oil Co. (Indiana), Chicago; C. F. Smith, Standard Oil Co. of New Jersey, New York; W. L. Stewart, Jr., Union Oil Co. of California, Los Angeles, Calif.; G. H. Taber, Jr., Sinclair Refining Co., New York; G. H. van Senden, Shell Oil Co., San Francisco, Calif.; and G. B. Watson, Pure Oil Co., Chicago.

Division of Refining, appointed by president: C. M. Boggs, Kanotex Refining Co., Arkansas City, Kans.; E. B. Reeser, Barnsdall Corp., Tulsa; E. T. Henry, Atlantic Refining Co., Philadelphia, Pa.; R. B. Jones, Panhandle Producing & Refining Co., Wichita Falls, Tex.; and J. Howard Pew, Sun Oil Co., Philadelphia, Pa.

Division of Production, elected by members: A. W. Ambrose, Cities Service Co., Bartlesville, Okla.; A. M. Blow, Amerada Petroleum Corp., Tulsa; C. Bunje, Jr., Illinois Pipe Line Co., Findlay, Ohio; H. D. Otha, Gordon Oil Co., Mount Pleasant, Mich.; W. L. Connally, Sinclair Prairie Oil Co., Tulsa; C. P. Dimit, Phillips Petroleum Co., Bartlesville, Okla.; L. E. Barrows, Texas Co., Houston, Tex.; R. B. Kelly, Pure Oil Co., Fort Worth, Tex.; F. W. Floyd, Carter Oil Co., Tulsa; M. E. Lombardi, Standard Oil Co. of California, San Francisco, Calif.; W. L. McLaine, General Petroleum Corp. of California, Los Angeles, Calif.; W. M. O'Connor, Atlantic Refining Co., Philadelphia, Pa.; E. H. Salrin, Tide Water Associated Oil Co., Houston, Tex.; F. O. Prior, Stanolind Oil & Gas Co., Tulsa; A. C. Rubel, Union Oil Co. of California, Los Angeles, Calif.; J. H. Russell, Gulf Oil Corp., Houston, Tex.; J. G. Dyer, Continental Oil Co., Ponca City, Okla.; J. R. Suman, Humble Oil & Refining Co., Houston, Tex.; A. J. Galloway, Shell Petroleum Corp., Houston, Tex.; and J. T. Hayward, Barnsdall Oil Co., Tulsa.

Division of Production, appointed by president: O. D. Donnell, Ohio Oil Co., Findlay, Ohio; C. H. Kountz, Sinclair Refining Co., Independence, Kans.; R. B. Lloyd, Lloyd Corp., Los Angeles, Calif.; J. Edgar Pew, Sun Oil Co., Philadelphia, Pa.; and J. M. Lovejoy, Seaboard Oil Corp. of Delaware, New York.

Six New Directors

Six new members were elected to the board of directors as follows: Charles P. McGaha, Fain and McGaha, Wichita Falls, and president of the Texas Division of the Mid-Continent Oil & Gas Association; W. A. Jones, Cities Service Co., New York; W. Floyd Clinger, Oil City, Pa., president of the Pennsylvania Grade Crude Oil Association; C. S. Jones, Richfield Oil Co., Los Angeles, Calif.; John M. Crawford, Parkersburg Rig & Reel Co., Parkersburg, W. Va.; H. Wilkinson, Asiatic Petroleum Co., New York.

The following directors were re-elected:

Production group: Pacific Coast, S. Belither, Shell Oil Co.; Rocky Mountain, B. B. Brooks, Consolidated Royalty Oil Co.; Central United States, Burdette Blue, Indian Territory Illuminating Oil Co.: J. Edgar Pew, Sun Oil Co.; Frank Phillips, Phillips Petroleum Co.; Charles F. Roeser, Roeser & Pendleton, Inc., and Eastern United States, O. D. Donnell, Ohio Oil Co.

Manufacturing group: Pacific Coast, R. D. Matthews, Union Oil Co.; Rocky Mountain, T. A. Dines, Salt Creek Producers Association; Central United States, H. R. Straight, Empire Oil & Refining Co., and Eastern United States, Charles L. Suhr, Pennzoil Co.

Distribution group: Rocky Mountain, W. H. Ferguson, Continental Oil Co.; Central United States, E. G. Seubert, Standard Oil Co. (Indiana); Eastern United States, W. T. Holliday, Standard Oil Co. (Ohio); Pipe Lines, Douglas S. Bushnell, Northern Group of Pipe Lines; Harry Moreland, Great Lakes Pipe Line Co., and Tankcars, L. J. Drake, Union Tank Car Co.

Foreign trade group: Far East, H. D. Collier, Standard Oil Co. of California, and Mexico and South America, Richard Airey, Asiatic Petroleum Corp.

Natural gas group: T. B. Gregory, Manufacturers Light & Heat Co.

Natural (casinghead) gasoline group; D. E. Buchanan, Hanlon-Buchanan, Inc.

At-large group (elected by members): F. R. Coates, Cities Service Co.; J. D. Collett, O'Keefe & Collett; W. N. Davis, Foster & Davis; R. C. Holmes, Shinglehouse, Pa.; H. T. Klein, Texas Co.; F. A. Leovy, Gulf Oil Corp.; J. F. Lucey, Lucey Petroleum Co.; E. W. Marland; E. B. Reeser, Barnsdall Oil Co.; H. F. Sinclair, Consolidated Oil Corp.; J. W. Van Dyke, Atlantic Refining Co., and H. C. Wiess, Humble Oil & Refining Co.

The following members of the at-large group were re-elected by the board of directors: C. E. Arnott, Socony-Vacuum Oil Co., Inc.; Paul G. Blazer, Ashland Refining Co.; E. DeGolyer, Felmont Corp.; J. Frank Drake, Gulf Oil Corp.; W. S. Fitzpatrick, Consolidated Oil Corp.; N. V. V. Franchot, D. W. Franchot & Co.; Alexander Fraser, Shell Petroleum Corp.; Jake L. Hamon, Cox & Hamon; Robert H. Colley, Atlantic Refining Co.; A. Jacobsen, Amerada Petroleum Corp.; B. L. Majewski, Deep Rock Oil Corp.; T. A. O'Donnell, Los Angeles; W. S. S. Rodgers, Texas Co. and E. L. Smith, Dallas, Tex.

Pennsylvania Stream Pollution Law Is the Most Stringent Yet Enacted

OIL CITY, Pa., Nov. 15.—With federal control of stream pollution due for consideration in congress, the oil industry can anticipate the effects of stringent regulation from a study of the new Pennsylvania law, described as "a more drastic stand than any ever taken before in Pennsylvania or any other state."

The Pennsylvania law, effective since September 1, was interpreted at a luncheon sponsored by the department of manufacture of the National Petroleum Association by Christian L. Seibert, an engineer of the state's sanitary water board, here this week. Seventy refiners and producers attended the meeting at which Pennzoil Co. and Quaker State Oil Refining Corp. were co-hosts.

The law's definition of industrial waste is, "any liquid, gaseous or solid substance not sewage, resulting from any manufacturing or industry," and it is likewise as specific in its definition of establishment, which "shall be construed to include any industrial establishment, . . . oil refiner, oil well, . . ."

It is obligatory for every "establishment" to file a detailed report December 1 showing the kind, characteristics and rate of flow of industrial waste and a detailed description of treatment plants in operation, in the course of construction or contemplated.

On December 31, 1934, there were 82,489 oil wells located in 18 counties in the state. Three forms would be required for each well, a total of nearly 250,000 reports. It is considered probable, however, the board will be satisfied with reports from each operator covering the different kinds of waste originating from his wells.

All plans for erection of treatment works are required to be submitted to the board before construction is begun and, if not, such plant becomes a nuisance and is "punishable and abatable."

Despite the drastic nature of the law, Mr. Seibert indicated the board would be inclined to be lenient. He said, however, it may be necessary to make several examples of those who do not try to comply.

During his talk he said refiners have shown more inclination to abate pollution causes than producers. He said producers' problems in the main are small oil losses, individually not serious but collectively a consequential source of pollution, and salt water. Salt water is a serious problem in the lower Pennsylvania fields but Mr. Seibert confessed he knew no remedy.

He listed disposition of waste oil, caustic wash water, acid sludge, emulsions and fuller's earth as the chief problems of the refiner and suggested common treatment plants for acid sludge and lagooning or cesspools for caustic wash waters. Questioned regarding seepage or leakage from pools, he replied it was against the law if such wastes contaminated streams or subsurface waters.

The drastic nature of the law is revealed in the case of a large eastern Pennsylvania refinery which uses water from the highly contaminated Schuylkill River for processing and cooling. Before using this water, the refinery treats it so that when it is returned to the river it is in a much less contaminated state than before. Despite the fact the plant actually returns cleaner water to the river than it takes out it is doing so against the law which prohibits industrial establishments from discharging any industrial wastes into waters.

The meeting was arranged by M. C. Mallon of the National Petroleum Association and P. M. Robinson of Pennzoil Co., chairman of the Oil City-Titusville group of the department of manufacture. L. D. Fulton, plant superintendent of Pennzoil Co., conducted the meeting. Additional remarks were made by Frank D. McCue, Oil City, a member of the state sanitary water board, and S. Y. Ramage, Oil City, a producer and an ardent advocate of antipollution legislation.

California Standard Denies Trespassing in Elk Hills

FRESNO, Calif.—Standard Oil Co. of California attorneys denied "trespassing" charges made by John W. Preston, former California Supreme Court justice, now prosecuting the government's $22,000,000 suit to recover title to oil lands in Elk Hills near Bakersfield, Calif.

Donald R. Richberg, former NRA administrator, answered that Standard operated the rich field with good faith in the validity of its title after buying the 640 acres from settlers in 1909.

Mr. Richberg contended Standard's claim had been upheld repeatedly until 1935 when Secretary of the Interior Ickes asserted the government's right to title. He asked Federal Judge Leon Yankwich to review the evidence upon which Secretary Ickes based his decision.

Kansas-Oklahoma Division Membership Meeting Set

The membership meeting of the Kansas-Oklahoma division of the Mid-Continent Oil and Gas Association has been called at 2 p.m., November 19, at the Tulsa Building.

More than 300 new members have been added to the rolls of the division during the year.

Charleston, S. C., Leads U. S. Cities In Percentage of Oil Burners

Charleston, S. C., leads American cities in percentage of oil burner installations. No less than 74 per cent of its total number of dwelling structures with central heating plants have oil burners, according to the best available figures.

Hartford, Conn., runs a good second, with 69 per cent of its centrally heated homes having oil burner installations; the West Coast follows New England in third place, San Francisco having 60 per cent. Boston is fourth, with 47 per cent. The full list of cities having over 20 per cent oil burner installations are, in order: Lynn, Mass., 46 per cent; New Haven and Bridgeport, 45 per cent; Oakland, Calif., 43 per cent; Fall River, 42 per cent; Springfield, Mass., 40 per cent; Portland, Me., 38 per cent; Worchester, Mass., 36 per cent; Providence, R. I., 35 per cent; Seattle, Wash., 32 per cent; Washington, D. C., and Waterbury, 30 per cent; New Bedford, 26 per cent; Minneapolis, 25 per cent; St. Paul, 23 per cent; Metropolitan New York, 23 per cent; and Omaha, 21 per cent. In actual number of installations, of course, New York leads with close to a quarter million.

The predominance of New England cities in those having high percentages of automatic oil heating equipment may be explained by the extremes of temperature in that region between winter and summer.

Agreement Out of Court In Price Cutting Suit

LOS ANGELES, Calif.—An agreement out of court brought to an end the suit filed by the Retail Petroleum Dealers Association against a group of independent gasoline dealers to enjoin the sale of gasoline at prices below cost.

The association charged the independent dealers had violated the Unfair Practices act by selling below cost. The action was sent before a referee for the taking of testimony. When the agreement was reached, however, the attorneys for both sides requested Superior Judge Schmidt to sign a dismissal of the suit in accordance with the conditions of the peace pact.

Proposal to License Stations Considered in New York State

NEW YORK, Nov. 16.—Proposals to license gasoline service stations in New York and for regrading of gasoline are to be brought up for discussion again November 18 and 19 in New York City at a meeting of the joint legislative committee investigating the oil industry in this state.

Assemblyman Harold B. Ehrlich of Buffalo, chairman of the joint legislative committee, has called the meeting and may make specific recommendations at that time.

"The number of gasoline stations now operating has just about reached the saturation point," Mr. Ehrlich said at Albany last week in calling for a discussion of state licensing of service stations. "As to grading of gasoline, it is well known that, while New York state has minimum specifications for gasoline, they are so far out of date that they are practically useless. There is little chance of successful prosecution for the sale of motor fuel that fails to meet even the low standards set by the state. By setting up new standards which recognize the developments in the manufacture of gasoline consumers could be assured of getting the grade for which they paid."

Mr. Ehrlich's committee was authorized to continue its study of the oil industry at the end of the last legislative session after it had held several hearings and examined many witnesses regarding details of the price structure. During the legislature's recess, the oil investigation committee has been engaged in assembling replies to a lengthy questionnaire directed to every company doing business in the state. In addition to questions on points in making up the price structure, the questionnaire also covered cost of production, refining and asked each recipient to give details of conditions of crude oil production.

Test on Confiscated Crude Oil Before U. S. Supreme Court

WASHINGTON, D. C.—Texas' long fight to confiscate 78,000 bbls. of alleged illegal oil produced by the Trinity Refining Co. has been laid before the Supreme Court. The oil is now in the hands of a bankruptcy trustee, David Donoghue. The question raised was whether the District Court and the Fifth Circuit Court of Appeals erred in declining to grant permission to Texas to take proceedings for the confiscation of the oil, produced in 1935.

Every member of the court, with the exception of Associate Justice Black, interrogated counsel for both sides closely.

The refining company went into bankruptcy and the excess oil was in the hands of the Federal District Courts before the state could institute proceedings and acquire the petroleum. Counsel for the trustee argued that the state did not have title to the oil and that the district court was consequently without jurisdiction to heed the claim.

Society of Exploration Geophysicists Program

HOUSTON, Tex.—A full program dealing with technical phases of geophysical exploration has been arranged for the autumn meeting of the Society of Exploration Geophysicists to be held at the Rice Hotel November 19 and 20. Some of the papers scheduled are:

"Measurements of Relative Ground Motion in Reflection Recording," by D. H. Gardner, Humble Oil & Refining Co.

"The Motion of a Geophone on the Surface of an Elastic Earth," by W. T. Born, Geophysical Research Corp., Tulsa, and A. Wolf, Texas Co.

"The Application of Fourier Integral Analysis to Some Geophysical Problems," by W. T. Born and J. M. Kendall, Geophysical Research Corp., Tulsa.

"A Note on the Propogation of Seismic Waves," by Dr. Morris Muskat, Gulf Research & Development Corp., Pittsburgh, Pa.

"The Reflection of Elastic Waves from Transition Layers of Variable Velocity," by Alfred Wolf, Geophysical Research Corp.

"On the Stratigraphy and Tactics of Exploration for Petroleum. II," by E. E. Rosaire, Subterrex, Houston.

"A Set of Curves to Assist in the Interpretation of the Three-Layer Resistivity Problem," by W. W. Wetzel and Howard V. McMurry, both of Humble Oil & Refining Co.

"A Historical Review of Electrical Prospecting Methods," by W. M. Rust, Jr., Humble Oil & Refining Co.

"Use of the Geo-Sonograph in Routine Exploration," by Curtis H. Johnson, Rieber Laboratory, Los Angeles.

"Seismic Exploration in Eastern Venezuela," by W. R. Ransone, Geophysical Service, Inc., Dallas.

The OIL AND GAS JOURNAL

PRODUCING REFINING NATURAL GASOLINE PIPE LINE

Published weekly by The Petroleum Publishing Company at Tulsa, Oklahoma

Time for Poise

This is a time for everyone in the oil industry to maintain his equilibrium.

In doing so he will not only help himself but he will aid in correcting a general business situation which has its panicky aspects.

Informal discussions during the American Petroleum Institute meeting at Chicago indicated some may have been unduly influenced by the sudden dropping off in demand that has been experienced by other leading industries. If they have been, they have overlooked the fact that the conditions prevalent in those industries are not comparable to the existing conditions or to the future developments in the oil business.

It would be useless to deny that various industries clearly show that a recession in general business is under way, the extent of which nobody knows. It is clearly apparent to anyone who has made even a superficial study of the oil business that it is not faced with any such conditions.

The demand for crude oil and most of the refined products continues to run far ahead of the same period last year. Leading economists are agreed that the coming year will see further increases in the demand for both crude oil and motor fuel.

In brief, according to all indications and giving full significance to unfavorable developments in general business, the oil business is assured of another peak year in 1938.

This, of course, does not mean that the oil industry, regardless of its own course, can sit back and assume that developments over the coming year will be favorable. Right at this time the industry is in need of minor corrections in both its refinery and crude oil operations to take care of seasonal curtailment in demand and for correcting a situation brought about by persistent overproduction during the earlier months of the present year.

The need for this correction is immediate to ward off price adjustments that may arise unless these conditions are rectified.

The main point, however, is that the industry should see that any adjustments that may be necessary in the market structure are brought about by conditions of supply and demand within the oil business itself and not caused by panicky fears based on conditions in other industries.

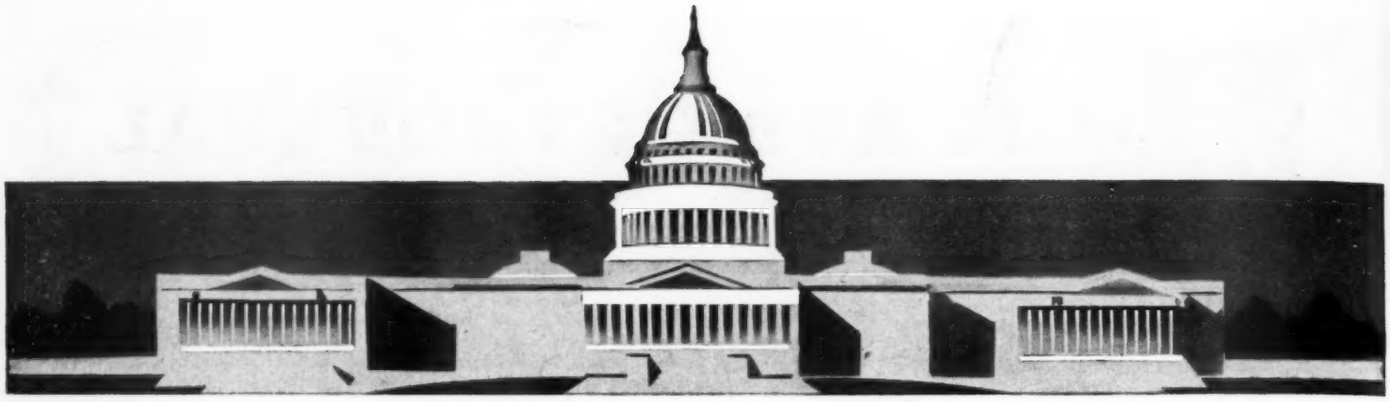
The oil business has advanced prices, wholesale and retail, less than any other industry during the period of advancing prices. There is no reason based on costs or consumer demand why these prices should be reduced at this time.

The oil industry has had no decline in demand in contrast to that in other businesses. As to its future the Bureau of Mines estimate of requirements for December indicates a demand for 300,000 barrels of crude more than during the exceptionally heavy demand in December last year—a gain of 10 per cent.

The surprising increase in consumption during the past three years, which exceeded all estimates and surpassed all expectations, demonstrated how essential the American people have found motorization to be in their daily life. Even in the depth of the depression they clung to their cars as an aid rather than a luxury.

With prices that have not been inflated, with an inventory situation that should be easily corrected, and with the largest demand for petroleum and petroleum products on record the oil industry is in an exceptionally favorable position.

The oil industry, it should be remembered, led in the emergence from the depression. It should keep on leading.



Change in Attitude to Utilities Important to Gas Pipe Lines

By HENRY D. RALPH

WASHINGTON, D. C., Nov. 15.—A new atmosph e prevaded Washington as congress assembled in special session, a definite undercurrent of feeling that it is time for the administration to relax the reins it has held over business, to postpone new and uncertain experiments, to curtail government spending and lending, and to do everything possible to stimulate normal business activity.

This feeling exists both at the capitol and among executive officials, but with this important difference: members of congress as a whole want to do something to help business, while administration leaders are anxious to use business as a means of promoting New Deal objectives instead of considering improved business as an end in itself. These objectives include an increased flow of federal taxes to permit the government to continue to finance its various social experiments and a gradually increasing national income which will support business and economic reforms of various sorts and permit redistribution of wealth, at the direction of the federal government.

For the time being, however, these two aims coincide, and as a result congress is expected during the next few months to do many things which will be of definite help to business as a whole, not only positive steps such as tax revision but also negative steps by refraining from enacting much proposed legislation which would have been a definite handicap to increased business activity.

The hesitation in business activity which has become evident in the past few weeks has had a profound effect upon New Deal strategists. Declining business means greatly reduced revenues for the treasury and endangers the objective of balancing the budget next year, which the administration had determined to achieve. Declining business also means greater resistance to new experiments such as wage and hour legislation, antitrust revision, and new forms of business control. Furthermore, it is very embarrassing, to say the least, to those administration spokesmen who have been declaring that business activity has been proceeding as planned by the New Deal and that controlled economy is a success. Some administration advisors are urging President Roosevelt to resume the pump priming theory and to borrow additional millions to pour out through new construction projects, new lending programs, and increased relief appropriations, but these advisors apparently are in the minority and the prevailing disposition is to balance the federal budget by economies, taper off emergency spending and lending, and to stimulate the flow of private capital into new construction activity and new business enterprises.

Construction Key

Construction of all kinds is seen as the key to stopping the incipient business slump, and various devices are being considered to foster new building by private capital. To this end the treasury is willing to make some concessions in the corporation earnings tax, though insisting on retention of the general principle of this tax. It is the general opinion this tax will be modified to prevent corporations from impairing their working capital and to permit them to reduce their debts and also to permit corporations to retain a certain percentage of their earnings for business promotion and the acquisition of new plants and modern equipment.

Equally great interest is centering in the home building field, and the administration is considering changes in the national housing act designed to attract private capital to the business of building small homes for rental purposes on a large scale, with mortgages insured by FHA, because surveys have shown that in this field lies a tremendous opportunity for much needed construction which would stimulate the markets for all sorts of building materials and home furnishings and equipment. Government studies have shown the railroads and utilities are greatly in need of new equipment and expanded plant facilities, and means are being studied for inducing expenditures in these fields. Unless the administration undertakes to loan money to the railroads at low interest rates, the roads will be in no position to finance equipment purchases without increased revenue, and it will take the Interstate Commerce Commission many months to pass on the pending application for a blanket increase of 15 per cent in all railroad freight rates.

Most interesting, as illustrating the change in the administration's attitude toward business, is the veiled overture being made toward a truce with the electric utility companies. Several New Deal officials, notably Chairman Douglas of SEC and Chairman McNinch of the Communications Commission, have recently made public statements hinting the utilities have nothing more to fear from the government and urging them to proceed with new financing and new construction immediately. President Roosevelt has even hinted his objective of reducing electric power rates might be accomplished through cooperation if the utilities would agree to have rates based on valuations determined by cost of investment rather than by the cost of reproducing properties new, and the Federal Power Commission has intervened in a case argued in the Supreme Court last week in which the court is asked to approve such a method of valuation, a method long used by the state of Massachusetts in utility regulation.

Bearing on Pipe Lines

Adoption of original cost, sometimes called the prudent investment theory, as the basis of fixing utility rates is of particular interest to interstate gas pipe line companies which would be affected by the Lea natural gas bill already passed by the house and pending in the senate. This bill directs the Federal Power Commission to fix natural gas prices based on the value of pipe line company properties, and it is apparent the commission is anxious to use original cost as the basis of value if the Supreme Court will sanction it. Utility rates are supposed to be fixed at a point which will give the company a fair return on a fair valuation of its property. The cost of reproduction basis of value tends to increase the rates if land and construction costs have risen during the life of the company, whereas use of original cost would tend to increase the rates if prices have fallen in the meantime. but many students of the utility problem are convinced that in any event it is much simpler to ascertain the original cost of a utility property than to determine its cost of reproduction on a given date and use of the original cost theory will do away with a great deal of litigation in fixing rates.

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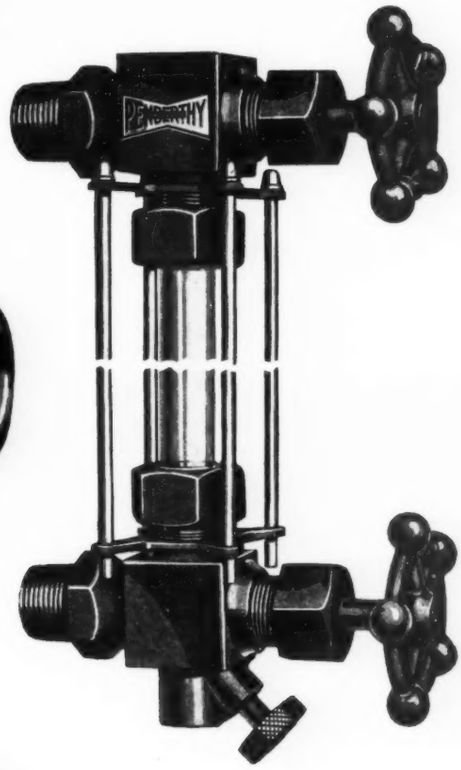

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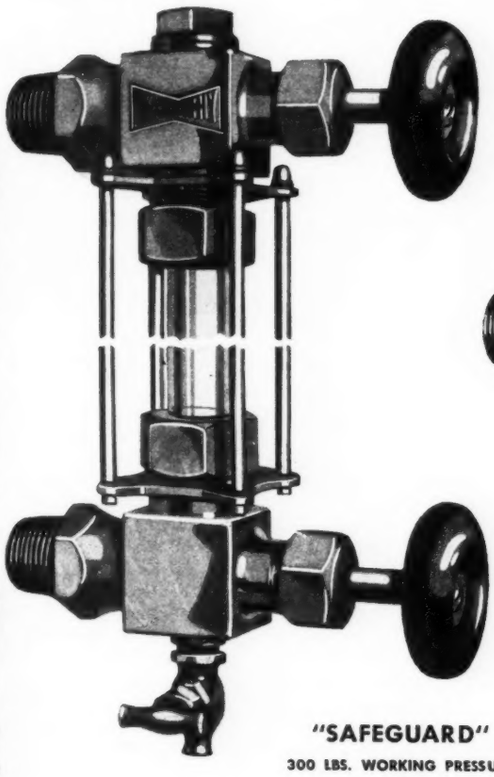

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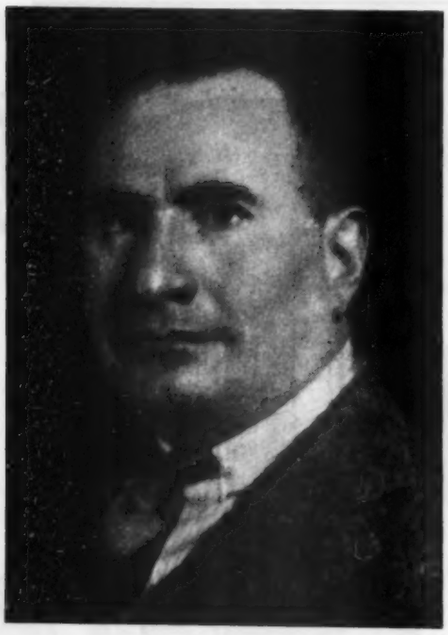
Taubman Retires From Bethlehem Supply; Guy A. Tompson Heads Corporation

Resignation of Herman P. Taubman as executive head of the Bethlehem Steel Corp., formerly Taubman Supply Corp., was officially announced in Tulsa today.

Guy A. Tompson has been appointed to head the company. For the past two years Mr. Tompson has served as vice president in charge of sales.

Mr. Taubman founded the Taubman Supply Corp. 17 years ago and, having strenuously continued his activities during that time, now plans a much-needed rest, after which he may engage in the production branch of the oil and gas industry. Mr. Taubman has been reluctant to sever his connection with the present company until the organization was properly lined up to go forward in accordance with the plans of the new ownership. Bethlehem Steel Corporation acquired the Taubman corporation in the latter part of 1936.



H. P. TAUBMAN

GUY A. TOMPSON

Eastern Colorado

(Continued from Page 22)

Surface elevation 3,592 feet. Top of Dakota 2,470 feet; top of Pennsylvanian 4,390 feet; top of Mississippian 5,258 feet; top of Ordovician 5,430 feet. Showing of gas were encountered in the Apishapa shales and showings of oil in the Upper Pennsylvanian section.

4. I.T.I.O.-Carter-Foster No. 1 Vorce, C NE NE section 28-1s-49w, Hyde block No. 3, Washington County, Colorado. Spudded in June 11, 1936, and completed November 9, 1936, in granite at 7,005 feet. Surface elevation 4,372 feet. Top of Dakota 3,695 feet; top of Pennsylvanian 5,570 feet. There was not any Mississippian or Ordovician sections present as the lower Cherokee of the Pennsylvanian was underlain by granite. Showings of gas were encountered in the Apishapa shales and showings of oil in the Muddy sand and Upper Pennsylvanian limestone.

5. Gulf Oil Corp. No. 1 Risser, C NW SE section 1-17s-50w, Galatea block No. 36, Kiowa County, Colorado. Spudded in November 17, 1936, and completed March 15, 1937 in granite at 6,175 feet. Surface elevation 4,467 feet. Top of Timpas 950 feet; top of Dakota 1,453 feet; top of Pennsylvanian 3,760 feet; top of Mississippian 5,383 feet; top of Viola 5,591 feet; top of Ordovician 5,665 feet; top of Arbuckle lime 5,701 feet. Showings of oil in Pennsylvanian and at contact between the Mississippian and Ordovician.

6. I.T.I.O. No. 1 Arbes, C Lot 2, section 2-21s-48w, Big Bend block No. 22, Bent County, Colorado. Spudded in June 25, 1937, and completed September 18, 1937, in Arbuckle lime at 5,651 feet. Surface elevation 3,936 feet. Top of Dakota 470 feet; top of Pennsylvanian 3,340 feet; top of Mississippian 4,945 feet; top of Ordovician 5,340 feet; top of Arbuckle lime 5,385 feet. Showings of oil and gas were encountered in the conglomerate in the Lower Pennsylvanian at 4,765 to 4,802 feet.

7. Morgan, Flynn & Cobb No. 1 Hostetter, C NW SE section 6-20s-46w, Nee-No-Shee block No. 26, Kiowa County, Colorado. Spudded in July, 1937, and completed September 27, 1937, in the Arbuckle lime at total depth of 5,540 feet. Surface elevation 3,995 feet. Top of Dakota 718 feet; top of Pennsylvanian 3,300 feet; top of Mississippian 4,950 feet; top of Ordovician 5,320 feet; top of Arbuckle lime 5,360 feet. Estimated 1,000,000 feet of gas encountered in a sand in base of Permian, 2,960 feet. Some oil showings in Pennsylvanian.

8. Gulf Oil Corp. No. 1 Smith, C SW SE section 19-15s-53w, joint test Karval block No. 14 and Rush Creek block No. 37, Lincoln County, Colorado. Spudded in August 31, 1937. Surface elevation 4,844 feet. Top of Dakota 2,295 feet. Drilling at 6,530 feet in black shale and brown lime.

OBITUARIES

SIMON ARMAND (POP) GUIDRY, 69, Louisiana oil prospector of New Orleans, died in New Orleans November 11. He had been identified with oil and mineral developments in Louisiana and Texas for more than 20 years.

EDWARD DAYTON CLAGGETT, 74, independent oil operator in the Laredo, Tex., district for the past eight years, died of internal injuries suffered when his automobile overturned.

THE MARKETS*

CRUDE OIL: *First break in West Texas crude schedules materialized when small refinery operator reduced all grades in Ward County 10 cents per barrel. Reduction has not been met by major buyers. Scattered weakness in crude markets with small quantities reported sold under market in Louisiana. Further reductions in crude output in Texas expected to strengthen market in that state.*

REFINERY: *Standards of New Jersey and Louisiana reduce base tankcar prices three-fourths cent per gallon in eight states. Mid-Continent refinery and natural gasoline prices lower. Residual fuel oil prices lower in several areas. Kerosene and furnace oils in good demand and prices generally steady.*

TANK-WAGON AND SERVICE STATION: *Posted dealer and tank-wagon prices reduced in several states of the South and East. Reductions said to be due to lower base tankcar markets and lower tanker rates. Considerable price cutting reported in retail gasoline sales.*

FINANCIAL: *Little change in representative oil securities. Average of 30 stocks for week ending November 13: High, 30.92; low, 28.33; close, 30.23. Week ending November 6: High, 31.55; low, 20.80; close, 29.03.*

**Detailed information in Market Section.*

Standard Oil to Raise Prices To Meet Freight Advance

CHICAGO.—Effective November 17, and thereafter, Standard Oil Co. of Indiana will advance prices of petroleum products as may be necessary to reflect the permanent advance of 1 cent per hundredweight in freight rates on petroleum products which the railroads have announced to take effect on November 15.

Illustrative of the adjustment will be advances in the wholesale prices of all grades of motor gasoline to dealers and the tank-wagon prices of all gasolines, naphthas, refined oils, tractor fuels, and domestic heating fuels in Michigan, Indiana, Illinois, Minnesota, Iowa, Missouri, Kansas, the Dakotas, and Wisconsin. At many points the advance will amount to one-tenth cent per gallon, but there will be a number of points at which no change will be effected, owing to the fact that the freight rate is figured to only the nearest one-tenth cent per gallon as affecting product prices.

Texas Railroad Commission Demands Return of Books

AUSTIN, Tex.—Return of records of Upham Gas Co., which serves seven Panhandle towns, for use in determining fair rates was demanded by the railroad commission under threat of receivership.

Absence of the records, which under state law must be kept in Texas, was discovered as the commission started an audit and appraisal on request of Clarendon. Other towns served by the company, domiciled at Mineral Wells, are Hedley, Lelia Lake, Archer City, Holliday, Megargel and Olney.

Clarendon sought a reduction in the rate from 75 cents to 60 cents per 1,000 feet, claiming such a reduction was promised in the franchise after a 10-year period, which ended last May.

Upon entering the case, said Commissioner Ernest O. Thompson, it was found that all records of the company were kept in Mount Vernon, Ohio. Employes drew drafts on a Mount Vernon bank for their salaries, he said.

Order Prorating Sweet Gas In the Panhandle Field

AUSTIN, Tex., Nov. 15.—The railroad commission received from its engineering department today a proposed order for prorating sweet gas in the East Panhandle field of Collingsworth, Gray and Wheeler counties. Production would be allocated on this basis: Two-thirds to the product of the acreage containing a well by the pressure at the well, and one-third to the well's potential. The existing line dividing the Panhandle gas field into the east and west zones would be continued.

Neosho Falls Operators Opening New Pools

By DAL DALRYMPLE

The Neosho Falls district of northeastern Woodson County, Kansas, is back in the oil pay after many years of little or no activity, with field operations increasing on the townsite and in nearby areas to the south where several sizeable producers recently have been completed in the first break in Mississippi lime. Already, the resulting play is spreading into adjoining sectors of Allen, Anderson and Coffey counties, indicating an extensive four-county drilling campaign for the near future.

This old and almost forgotten producing sector of southeastern Kansas was given new life late in the summer when Diller Oil & Gas Corp. and Harry L. Mourer and associates opened the Draper pool in section 10-24s-17e, about 2 miles southeast of the town of Neosho Falls, on a 2,000-acre block. Additional impetus was given the area during the summer when Trinity Oil & Gas Co. completed the first producer on the townsite. Other recent strikes have been made about 1½ miles east of town, about 2 miles southwest of town and 1½ miles south of town.

Diller-Mourer No. 1 Draper, NE NE NW section 10-24-17, came in for about 200 bbls. initial production last August to open the Draper pool. It found pay in the first break of the Mississippi lime at around 1,203 feet and was bottomed at 1,208 feet. Present production gauge of the discovery well was reported around 198 bbls. of oil daily, but operators hoped to increase that somewhat by deepening to lower pays found in offset wells. The Draper pool is near the northeast side of the block owned jointly by the Diller company and the Mourer interests. This strike was the second in Kansas within the year for David H. Morgan, who is directing activities of the Diller firm, the first having been the Key Siliceous lime pools near Moline in Elk County. A second producer has been completed as east offset to the Draper discovery well, a third is near completion and location has been made for a fourth.

While work was going ahead conservatively in the Draper area, the Neosho Falls townsite had become attractive to operators. George Lieurance, postmaster at Neosho Falls and a pioneer operator in Woodson County, had confidence in the area. He remembered that a shallow well drilled on the townsite back in 1922 produced about 4 bbls. of oil daily, naturally. He believed with present methods of drilling, plus the encouraging effect acidization has on production, some worthwhile producers could be drilled on and near the townsite.

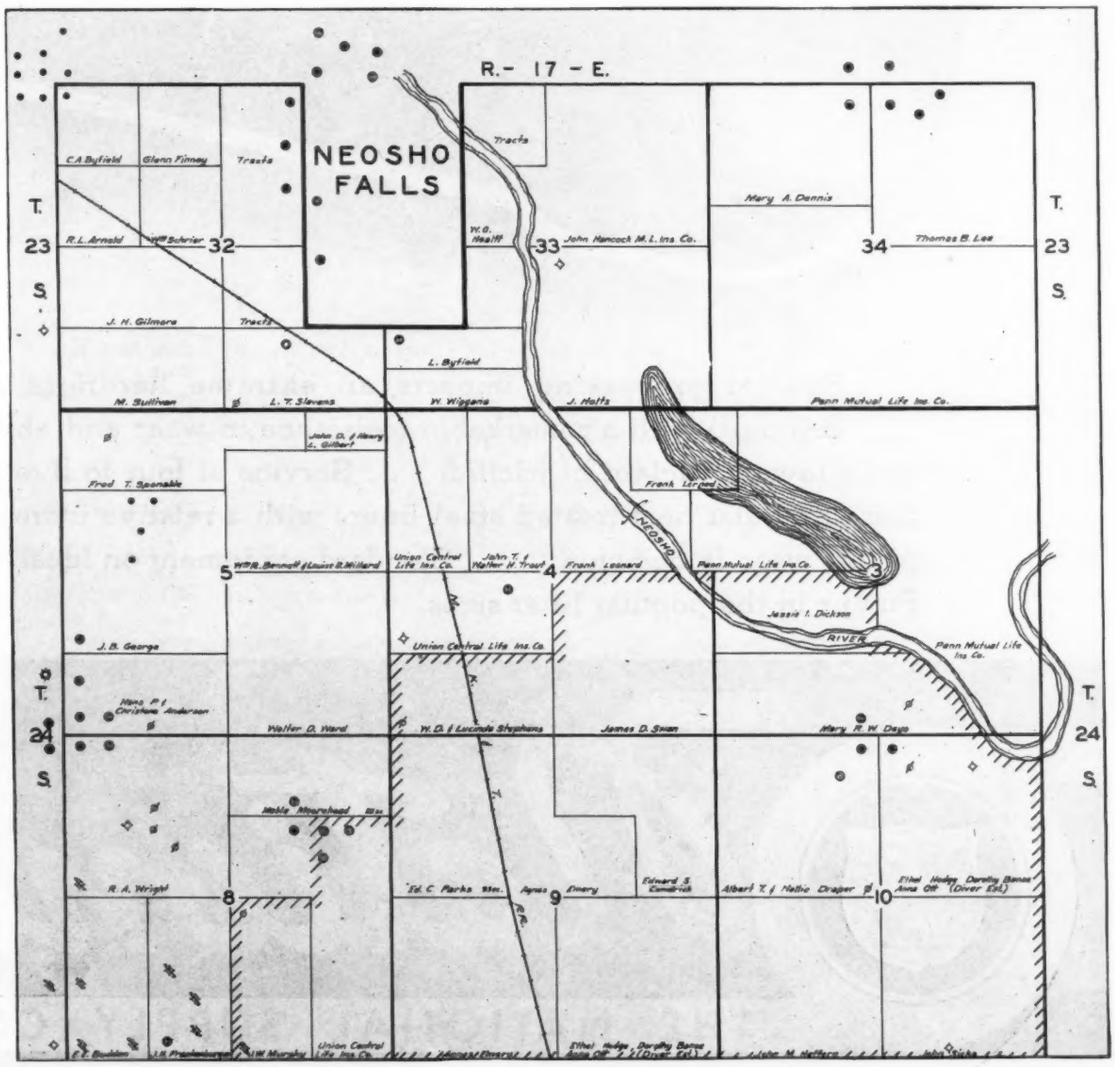
The surface geology of the area was worked originally by Theodore M. Cady of Wichita, as retainer for Mr. Lieurance, in 1922. Two elongated closures were mapped on a north-south anticline separated by a shallow saddle.

"Some other wells were drilled in this general area years ago," Postmaster Lieurance said. "The third well in Kansas was drilled on the J. G. Wilson farm, three-fourths mile west and one-half mile north of town, in the early nineties. It still has oil in the hole at 900 feet, about 75 feet below Oswego lime. Gas has been found around here for years. Some of us old timers around Neosho Falls were confident the oil was here and, with acidization coming along to boost production, we believed the time to act was at hand."

So, during the summer, Trinity Oil & Gas Co. drilled a test in the back yard of Dr. A. J. Lieurance, father of Postmaster Lieurance and the noted composer, Thurlow Lieurance, found production that amounted to 150 bbls. of oil daily after acidization, and the townsite campaign was on!

Seven producers on or at the edge of the townsite have been completed, and seven rigs were running when a representative of The Oil and Gas Journal visited Neosho Falls recently.

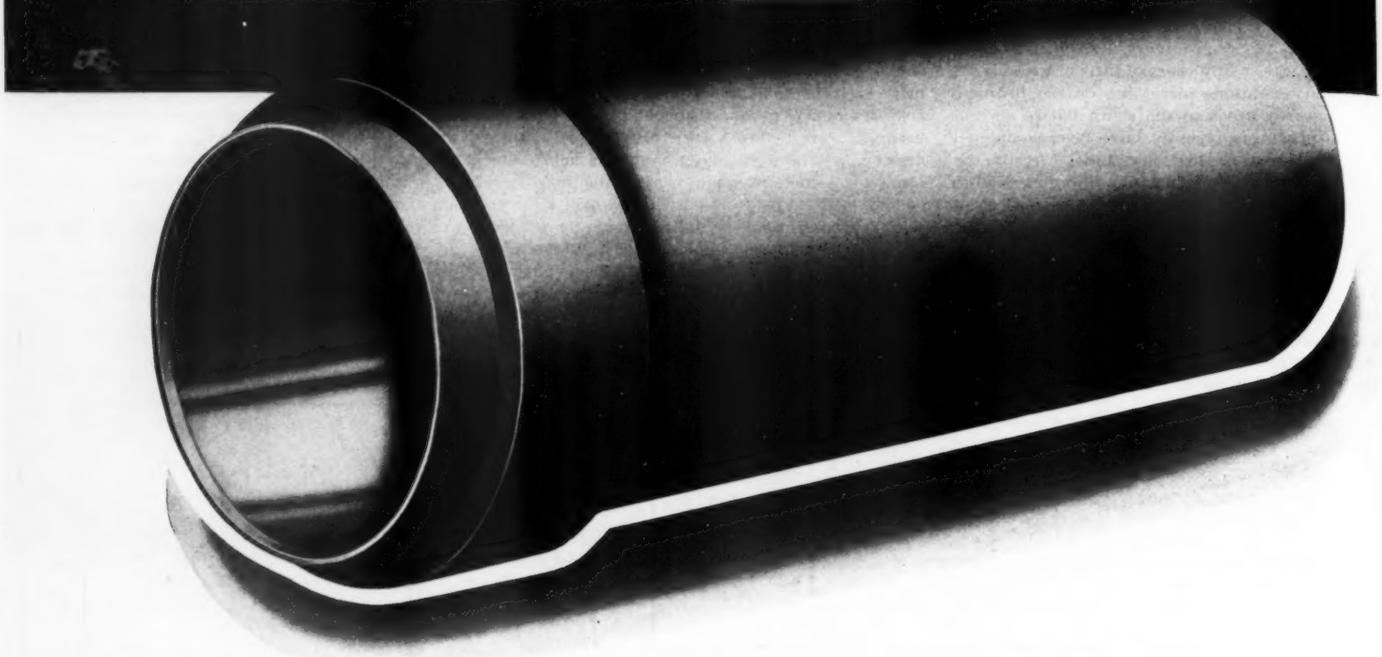
The Mississippi lime is found at around 1,140 to 1,200 feet in these wells. The oil tests 36 gravity.



This sector of northeastern Woodson County is one of the busiest fields in Kansas, as operators uncover production in the first break of the Mississippi lime on the Neosho Falls townsite and in four other nearby pools. Key to the map is found in the accompanying article

NATIONALLOY LINERS

NEW SUPER DUTY LINERS THAT REDUCE OPERATING COSTS ON IDEAL SLUSH PUMPS



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with some of the production in adjacent areas testing as high as 40 gravity. In the old, shallower wells to the west, oil testing 27 gravity is found, this grade providing a good diesel engine oil. The wells are drilled with spudders and small rigs, on contract at $1.75 a foot turnkey. Markets are comparatively close at hand, the higher gravity oil being trucked to refineries at Chanute and the low-grade oil being shipped to Kansas City for fuel purposes.

Interest in the past few weeks has been centered in a new area just being opened almost due south of Neosho Falls at the A. C. Thomas and associates No. 1 Union Central Life Insurance Co., NE SW NE section 8-24-17, which has been testing 40 bbls. of oil daily before acidization, indicating it would be one of the largest producers yet drilled in the area after being treated with acid. It was drilled on a farm-out from the Diller and Mourer interests and is just outside the latter's block, Four other tests already are under way at offset or nearby locations.

The Thomas strike, which found pay at 1,216 feet and was bottomed at 1,219 feet, is nearly 2 miles west and slightly south of the Draper pool. Less than a mile to the northwest is another pool in which several wells have been completed and more drilling. About 2 miles north of the Draper pool and less than 1½ miles east of Neosho Falls is a pool in which six wells have been completed. The intervening areas between these five producing sectors have been largely untested, and are due for wide exploration within the next year.

The accompanying map, drawn up to date the past week by the Diller-Mourer interests, shows the relationship of these pools and present development in the Neosho Falls area. Recently completed producing wells in the first break in Mississippi lime at approximately 1,200 feet are designated by the large black dots in circles. Wells now drilling to the first break are designated by small circles and a cross-bar within large circles. The one dry hole in the area that recently was completed in the first break, is shown at the southwest corner of the townsite. Locations for tests to be carried to the first break are designated by small dots within two circles. Old abandoned gas wells at 1,150 feet in sand above Mississippi lime are shown by small circles with cross bars running northwest to southeast, principally at the southwest corner of the map. Old abandoned oil wells which produced from the first break at 1,200 feet are designated by circles with cross bars running from northeast to southwest. Producing oil wells in Peru sand at 850 feet are represented by small solid black dots, grouped in one pool due west of Neosho Falls and in another pool in NW section 5-24-17. Dry holes in shallow sands and top of Mississippi lime are designated by circles with four projections. Outline of the Diller-Mourer block is shown in sections 3, 4, 8, 9 and 10-24-17.

Operators active in this new play, in addition to those mentioned, include J. H. Wille, J. I. Gillespie, Sharp & Tanner, C. H. Judd, A. J. Rapp and others, Hale Oil Co., Veeder Supply & Development Co., Norton Brothers, Nat Wissman and others, Lilly & Son, Jess Ball, George Cress and associates, Rush & Son, L. D. Burton, N. L. Smith and others.

Woodson County activity is not confined to the Neosho Falls sector, other sections being quite active. Chris Sheedy and associates, the Oko Oil Co., Nigh & Kilby and other operators long have been active in the shoestring areas in the western townships of the county. The Hogueland area, 7½ miles north of Yates Center and west of Neosho Falls, where Colonial Oil Co., Nat Wissman and other operators are drilling, is one of the new areas.

Although production in the first break of the Mississippi lime is the principal objective of operators in the Neosho Falls district right now, they are not overlooking prospects for Bartlesville and Chat production. Local operators believe new Bartlesville sand shoestrings may be uncovered at any time. The shallow production, comparative low cost of development, economical maintenance and a ready market hold major interest of operators now—possibilities of the Simpson, Wilcox, Siliceous and other deeper formations are largely for future consideration.

California Natural Gasoline Association Holds Meeting

By P. P. SANDERS

LOS ANGELES, Calif., Nov. 16.—At the all-day meeting of the California Natural Gasoline Association held today at the Ambassador Hotel, interest of 750 members and guests was aroused when Henry N. Wade, of Parkhill-Wade, Inc., presented his paper, "Present Status of Polymerization in Connection With Natural Gasoline Manufacture."

Polymerization was recently introduced on the Pacific Coast, but it has been used and will be used in plants now under construction only to process gaseous fractions from refinery cracking plants.

Mr. Wade discussed polymerization of the light materials which can be derived from stabilizer discard at the ordinary gasoline plant. In such plants polymerization is able to conserve for use as motor fuel materials which are now either wasted or used for low-grade fuel purposes. Two commercial processes are available for this conversion, the straight heat-pressure-time type and the type in which a catalyst is used.

Results indicate that 35 to 45 per cent by weight of the feed stock taken from a gasoline plant's stabilizer can be converted to polymerized gasoline. Due to the cost of processing there are now few locations where polymerized gasoline can be produced at a price comparable to other gasoline. However, there are many cases where the value of this product is much greater when used for blending purposes to improve the quality of other gasolines.

T. R. Beauchamp discussed proving procedure for positive liquid displacement meters for measurement of natural gasoline. In late years much progress has been made in designing accurate liquid displacement meters. Increased use of these would greatly reduce fire hazard and storage costs in gasoline plants, but their acceptance has been retarded because of the lack of adequate and convenient tests for these meters in service. Recently, however, Texas Co. and Union Oil Co. have developed equipment and procedure for proving these instruments. The gasoline is passed through the meter at normal operating conditions and into a proving tank where the volume is measured accurately. Sufficient pressure is used to prevent vaporization, and the method employs the downward displacement of water in the measuring tanks.

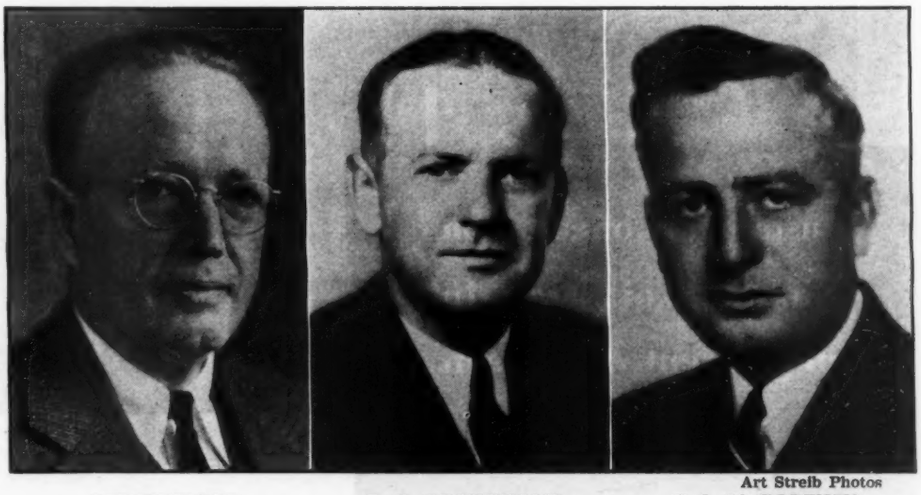
Warren H. Kraft reported on the work of a committee which had been concerned with the standardization of equipment. A new device for sampling gasoline on a tank truck was described.

D. A. Smith, as chairman of the physical constants committee, tendered a report on the progress of his committee. Data concerning physical constants are accumulated along ever-broadening lines in an attempt to make the C.N.G.A. bulletin a complete working tool for members.

Work of the liquefied petroleum gas committee was discussed by Charles L. McCartney, who divided liquefied gases into two groups, bottled gases and commercial butane. The use and handling of each group was considered.

The featured speaker of the day was Doctor Uren who disclosed his views on the present and future of California's oil and natural gasoline industries. Present reserves were believed sufficient for 25 years, and future large discoveries are expected in the San Joaquin Valley, while the industry is economically sound, it was considered necessary that emphasis be placed on secondary recovery in the near future, using input gas. By this operation both the oil and natural gasoline industries would receive greater benefits.

The presiding officers were: J. C. Burks, president; H. R. Linhoff, vice president, and Wallace McIlhany, secretary-treasurer. Following the technical sessions the group enjoyed a banquet.



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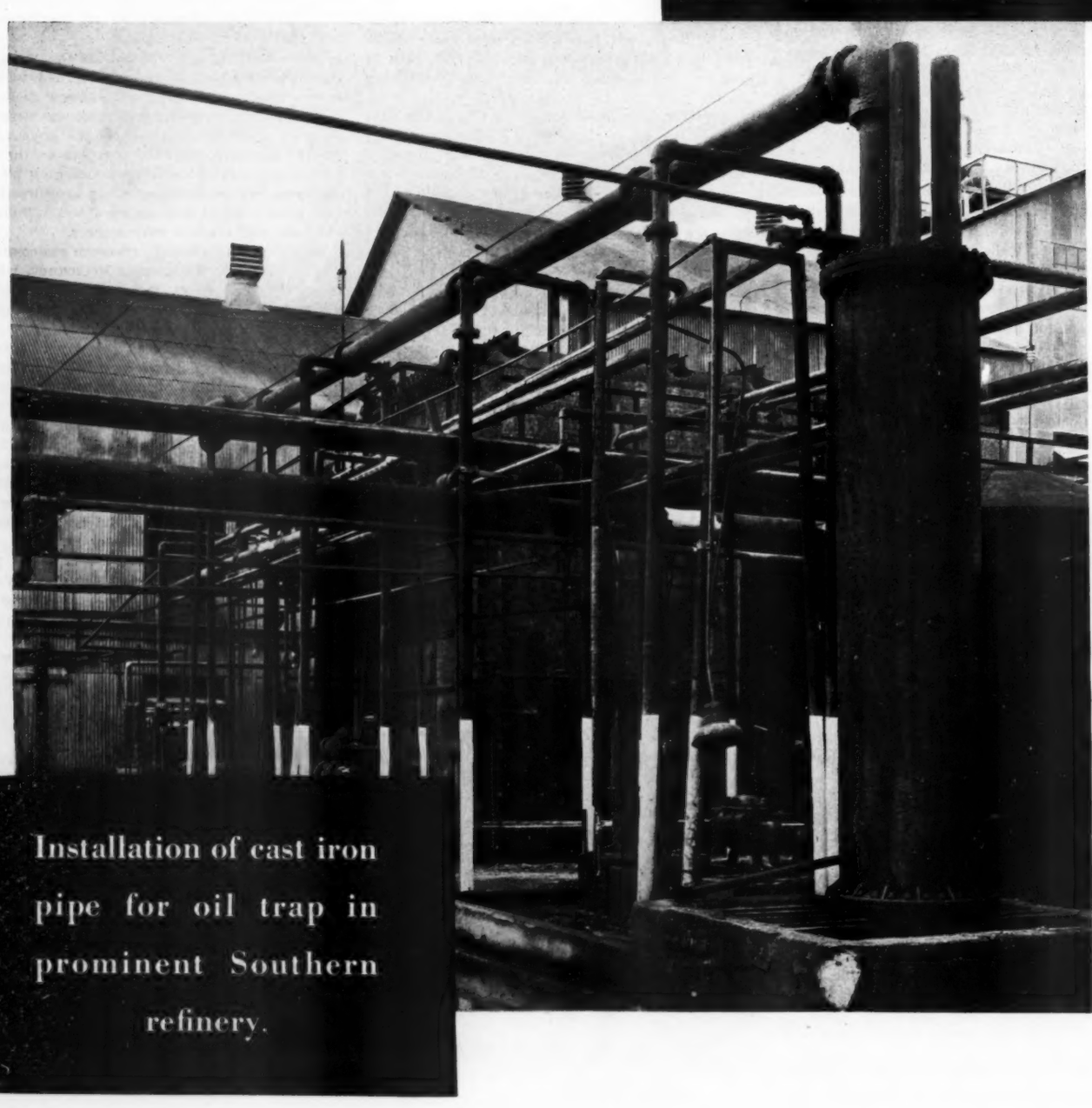


Installation of cast iron pipe for oil trap in prominent Southern refinery.

Billion Barrels May Ultimately Be Secured Off Pacific Coast

By WILLIAM J. KEMNITZER

Considerable quantities of crude petroleum and natural gas underlie the tide and submerged lands off the Pacific Coast of North America. On the basis of present actual and potential production and of known geological conditions, a reasonable estimate of about one billion barrels ultimate production of crude oil may be obtained from these lands. As a matter of rational supposition, however, these lands may yield much more than the present estimate because the known deposits are only partially developed and the geology of the tide and submerged lands has not been done in detail except locally.

The Pacific Coast of North America lies within the boundaries of Alaska, Canada, the United States, Mexico, Guatemala, Honduras, Nicaragua, Costa Rica and Panama. Although some indications of petroleum have been observed along the entire coastline from Point Barrow, Alaska, to the Canal Zone, by far the most important developments and indications are along the coast lying within the United States proper, and particularly within the state of California. Along the California section, indications of petroleum from Mendocino County (100 miles north of San Francisco) on the north to Riverside County (east of Los Angeles) on the south, but by far the most favorable section lies south of San Luis Obispo and north of Newport Bay in Orange County.

California

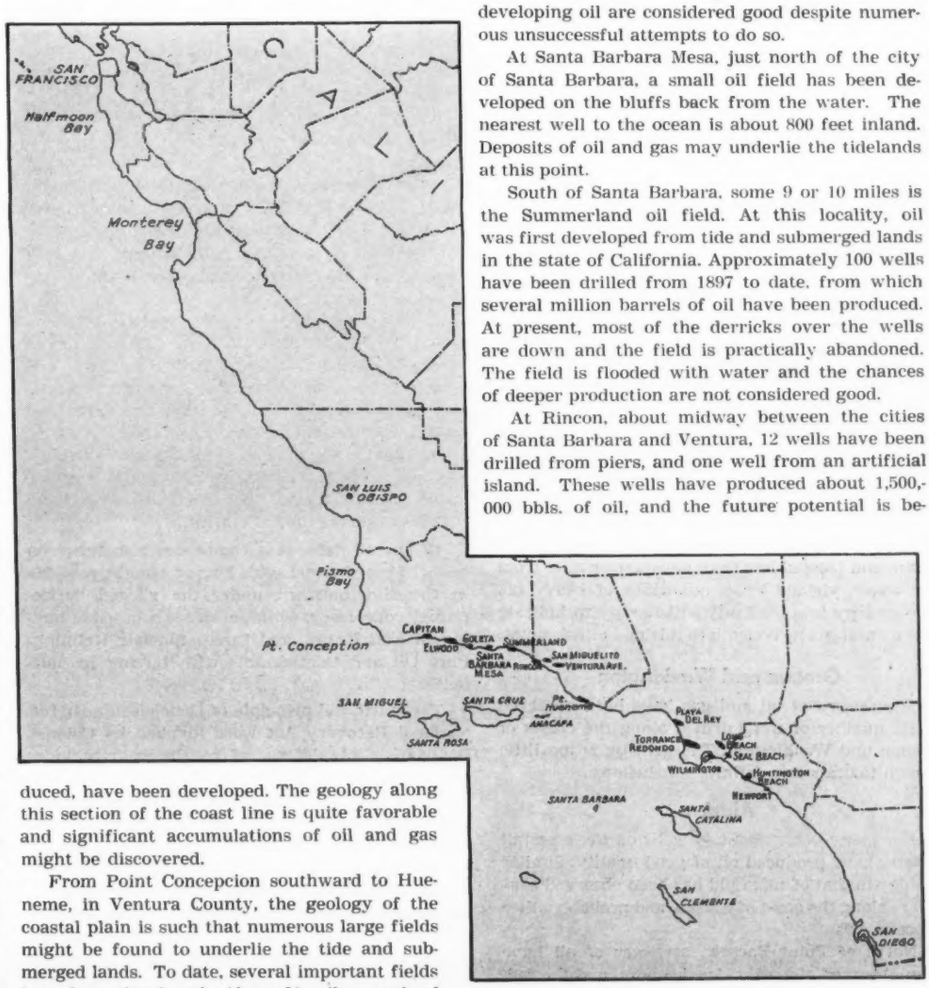
Along the California coast, oil sands, tar or brea deposits, and seepages of oil and gas occur at numerous places along or near the tide and submerged lands. The most northerly evidences of petroleum along the ocean shore are in Mendocino County where some drilling has been done but where future possibilities are problematical. Southward, outcrops of bituminous sands have been observed at intervals along or adjacent to the shore as far as San Francisco Bay, notably in the vicinity of Bolinas Bay in Marin County.

South of San Francisco Bay the first significant indications of petroleum occur at Half Moon Bay in San Mateo County. Here several wells back a mile or more from the ocean have produced small quantities of high-grade oil for a number of years. Along the ocean the geology is not wholly unfavorable for commercial accumulations of oil and gas; and, sporadically, drilling and leasing activities have taken place.

In the vicinity of Monterey Bay, bituminous sands occur, and in certain localities the geology is not unfavorable for limited accumulations of oil and gas. Between Monterey Bay and Pismo Bay, a considerable distance to the south, the geology is almost wholly unfavorable for petroleum, and no evidences of oil and gas have been observed. South of Pismo Bay, however, the most favorable indications of petroleum have been observed, and even in the ocean a number of prominent seepages occur, and thick oil and tar are not uncommon flotsam in the region.

At Pismo Bay, just north of the town of Pismo, several thick oil saturated sands crop out on the beach. The stratigraphic sequence of beds is marked with unconformities, crystalline and basement rocks occur near the surface and the geology in general is believed to be too complex for accumulations of large proportions.

Southward from Pismo Bay, and off the Santa Maria Basin in San Luis Obispo County, a number of large oil fields from which heavy oil is produced, have been developed. The geology along this section of the coast line is quite favorable and significant accumulations of oil and gas might be discovered.



From Point Concepcion southward to Hueneme, in Ventura County, the geology of the coastal plain is such that numerous large fields might be found to underlie the tide and submerged lands. To date, several important fields have been developed. About 30 miles north of the city of Santa Barbara is the Capitan field. Here several wells in the tidelands have yielded about 20,000 bbls. of oil each since 1930. It is estimated that these wells may each produce an additional 30,000 bbls. of oil. Although the output of these few tideland wells has been small, the result is indicative of possibly greater accumulations.

At Elwood, about 15 miles north of the city of Santa Barbara, approximately 60 wells have been drilled from piers into the tide and submerged lands since 1929. About 40,000,000 bbls. of oil have produced from these wells, and about 20,000,000 bbls. more may be expected. This field, next to the Huntington Beach field, 150 miles to the south, is the largest yet developed under tide and submerged lands, and the chances for deeper sands are fair if not good.

At Goleta, about 5 miles south of the Elwood field and not far back from the shore, a significant gas field has been developed. The chances for developing oil are considered good despite numerous unsuccessful attempts to do so.

At Santa Barbara Mesa, just north of the city of Santa Barbara, a small oil field has been developed on the bluffs back from the water. The nearest well to the ocean is about 800 feet inland. Deposits of oil and gas may underlie the tidelands at this point.

South of Santa Barbara, some 9 or 10 miles is the Summerland oil field. At this locality, oil was first developed from tide and submerged lands in the state of California. Approximately 100 wells have been drilled from 1897 to date, from which several million barrels of oil have been produced. At present, most of the derricks over the wells are down and the field is practically abandoned. The field is flooded with water and the chances of deeper production are not considered good.

At Rincon, about midway between the cities of Santa Barbara and Ventura, 12 wells have been drilled from piers, and one well from an artificial island. These wells have produced about 1,500,000 bbls. of oil, and the future potential is believed to be 2,500,000 bbls. The chances for deeper production here are good.

Southward of Rincon to Point Mugu near Hueneme, the geology is considered excellent for accumulations of oil and gas on tide and submerged land. On the islands off this section of the coast opposite Santa Barbara and Ventura counties, some production might be developed, especially in the more favorable localities. The Standard Oil Company of California drilled one well unsuccessfully on Santa Rosa Island. In the ocean, north of San Miguel Island at a distance less than a mile is a

prominent oil seepage marked as such on the hydographic map of the U. S. Coast and Geodetic Survey. San Nicolas Island, about 78 miles distant from San Pedro, Los Angeles County, is structurally a large dome of tertiary sediments. The west end of this island is strewn with deposits of heavy oil and tar which appear to have come from a subterranean seepage off the island.

Between Hueneme, a small settlement about 20 miles south of the city of Ventura, and Santa Monica in Los Angeles County, the chances for petroleum are practically nil. South of Santa Monica to Newport, however, the chances for large accumulations of oil and gas beneath tide and submerged lands are excellent.

At Venice and Playa del Rey, 200 or more wells have been drilled along the shore, many at the water's edge. The possibilities of developing oil and gas beneath the tide and submerged lands at this locality are good.

At Redondo and Hermosa Beach, several wells less than 1,000 feet from the ocean, have produced oil for a number of years. The geology of the area indicates a large deposit off shore and a large seepage in the ocean at this point is definite indication of an accumulation beneath the ocean floor.

At Wilmington recent development has taken place up to the waters of the harbor. There is little doubt but that large accumulation of oil and gas lie beneath the waters of the harbor and in the ocean beyond.

Off the cities of Long Beach, Seal Beach, and Sunset City, the stratigraphic and structural conditions are such that accumulations of oil and gas may be found.

At Huntington Beach, 86 wells are slanted from the uplands into the tide and submerged lands. These wells have produced nearly 30,000,000 bbls. of oil since 1933, although the first well entered the tidelands in 1926 or 1927. About 40,000,000 bbls. more of crude oil may be expected from these 86 wells, which cover less than 100 acres. In addition, however, as much as 600 acres of structure remains undeveloped from which between 350,000,000 to 400,000,000 bbls. of oil may be expected. The chances for deeper productive sands are good.

At Newport, 6 miles south of Huntington Beach, several wells now some years abandoned and torn down, and located less than one-quarter mile from the water, yielded small quantities of heavy oil. The geology is sufficiently satisfactory to indicate that oil and gas lie beneath to tideland at this point.

Oregon and Washington

Indications of oil and gas have been observed and a number of wells drilled along the coasts of Oregon and Washington. The geology is too little known to draw any definite conclusions.

Alaska

For many years about 40 wells on the ocean at Katalla have produced oil of good quality. Similar geology to that of this field has been observed elsewhere along the coast of Alaska, and probably other deposits exist.

North of Point Barrow, seepages of oil have been observed along the Arctic shore, and the federal government has set aside this region as Naval Petroleum Reserve No. 4.

On the whole, the petroleum geology of coastal Alaska is too little known to draw any significant conclusions as to the petroleum possibilities of this region. The fact that at least one commercial deposit of oil has been developed, the occurrence of seepages, and knowledge of locally favorable geology indicates the region to have, at least, possibilities worth investigating.

Mexico

Lower California is not generally supposed to be potential oil land. Some rather thorough investigations have been made by private oil companies. Reports are that the geology, except possibly locally, is not favorable.

In the vicinity of the Isthmus of Tehuantepec, many excellent seepages are known, and oil sands outcrop at the water's edge in some localities, notably north of Puerto Angel, Oaxaca. The petroleum geology is not well known, but in light of the actual occurrences of oil, the area should be investigated.

MADISON

(Continued from Page 24)

Motions also demanded that testimony of Carl E. Beroth, Chicago broker, in regard to conversations with refiners concerning the alleged "buying programs" in the Mid-Continent and East Texas fields, and that of John M. Bradshaw, Dallas commission buyer, relating to telegrams and other messages exchanged with Beroth, be excluded on grounds that the government had not sustained its promise to prove that Bradshaw was a "co-conspirator," and that the messages, read into the records, did not "refresh his memory."

Colonel Donovan argued that the motions of all individual defendants should be granted for four principal reasons:

1. That defendants who bought gasoline in the Mid-Continent field did not unreasonably restrain trade;

2. That as to defendants charged with buying in East Texas the only program shown in that field was a lawful selling program organized by independent refiners and that if the court feels there was a buying program it clearly did not unreasonably restrain trade;

3. That there has been a complete failure to prove the "single general scheme or agreement alleged in the indictment." it having been "uniformly held" that where one large conspiracy is charged, proof of two different and disconnected conspiracies cannot sustain a conviction; and

4. That the prosecution's failure to establish any agreement concerning indicted journals constituted a "fatal variance" between the evidence and the allegations in the indictment.

Of the 19 defendant companies remaining on trial, 13 are charged with having bought gasoline in the Mid-Continent under the alleged "price-fixing" conspiracy, while seven are accused of buying in East Texas, and three—Sinclair Refining, Pure Oil and Continental—with buying in both fields.

The spirit and principle of the codes under the National Recovery Act were invoked by Colonel Donovan in his defense of purchases from independent refiners. Under the activities described by Walter P. Jacobi on the stand, he pointed out, the major companies were to purchase only needed gasoline and no obligatory prices were imposed.

Jacobi testified the companies hoped a rise in the tankcar market would result, Donovan said, but the government "seized upon Jacobi's explanation as something sinister." The prosecution forgot, he argued, that the fundamental principle of the code was "cooperation" and that a new principle of "live and let live" had succeeded the doctrine of "dog eat dog" as manifested in the determination of major companies to pay a "fair going price" instead of distress prices for surplus gasoline.

"It was foolish and stupid to ignore the possibility that these men could have had decent motives and purposes," he charged.

Under the code, he explained further, the large refiners were limited in the amount of gasoline they could produce and hence were compelled to purchase sufficient to meet their needs.

Pointing out that the defendants are charged with fixing a high and arbitrary price to jobbers in the Mid-West, Colonel Donovan argued that with dismissal of the case against indicted journals, the "connecting link" in the alleged conspiracy was destroyed.

"No step in the plan can be eliminated without causing the whole to collapse," he said.

"Clearly there is no agreement shown to fix the prices paid by the jobbers, for the jobber price, according to the government, is based upon the price published in the trade journals, and there is no proof that these defendants fixed the price published in the trade journals."

Answering a question raised by the court as to whether the journals might "unwittingly" have published false prices, Colonel Donovan declared, "The journals neither wittingly nor unwittingly published prices paid by majors as jobber prices."

The arguments, it was indicated, would continue several days.

A full afternoon was consumed in statements by Goldthwaite Dorr, counsel for Socony-Vacuum Co., and T. P. Young, counsel for Shell Petroleum Corp., who charged the government has made "a strenuous effort to keep out the truth" regarding the petroleum code, and that witnesses were "hectored" and "scared" into testifying before the grand jury.

Jude Stone countered with an observation that there was a "remarkable variance" between the testimony of witnesses before the grand jury and testimony in the trial.

After the court had expressed a primary interest in the question as to whether there was an "unlawful agreement," Mr. Dorr argued that the Connally "hot oil" act, not the buying activities of major companies, was a major factor in the stabilization of gasoline prices.

Mr. Young particularly criticized the "subtle emphasis" placed by the government upon phrases such as "buying program" and "buying group," in reading documents to the jury from the files of the Shell company. The phrases, he argued, dated back to the days of the code, one of the purposes of which was to raise prices and wages. The code, he pointed out, provided for purchases of gasoline from nonintegrated refiners, and there were five to seven buying programs under its provisions to relieve the market of distress gasoline and stabilize the tankcar market.

Defendant companies went into these programs at the government's request, and lost money, Young declared, and the programs never accomplished their purpose until the Connally act was passed.

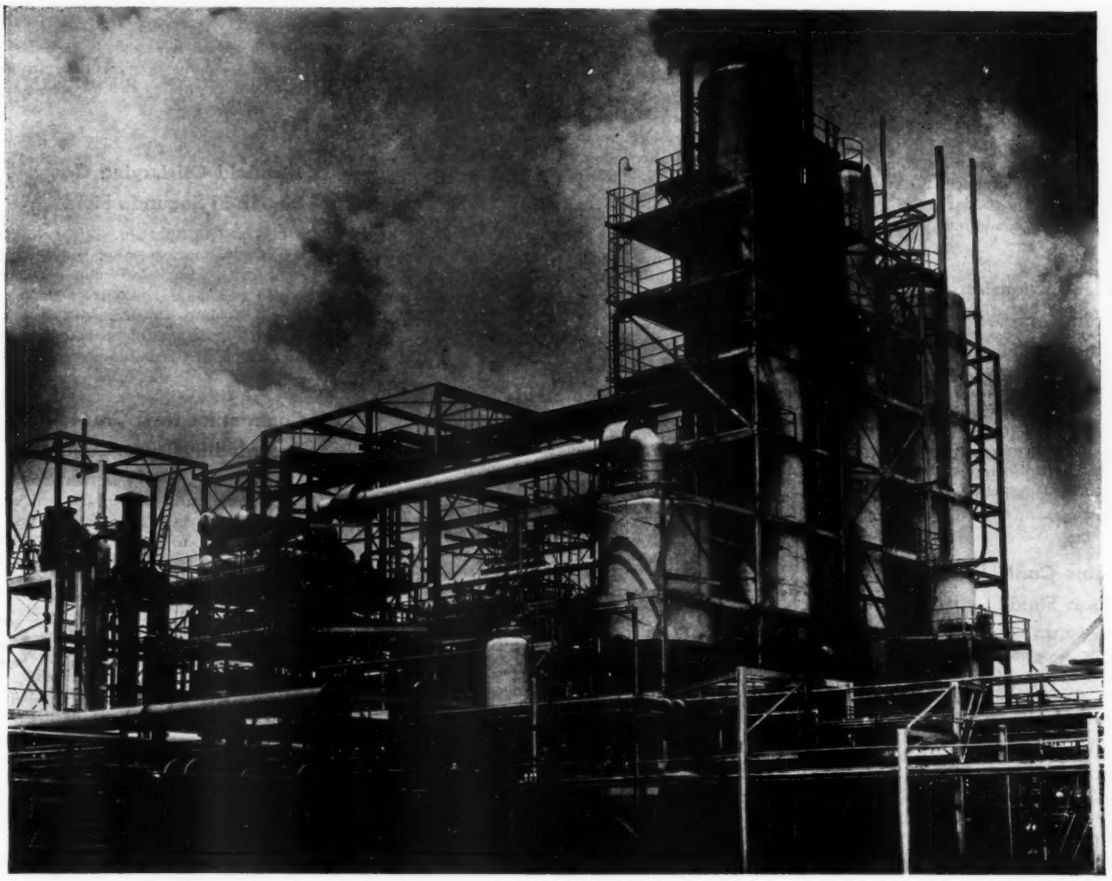
Some of the Shell letters, which the prosecution "pieced together into a lurid story of conspiracy and crime," were written in January, 1935, when the code programs were in full force, but the prosecution has been careful not to bring out the fact, Young charged, declaring the government has "carefully suppressed the testimony of its own witnesses."

Young said he has sat through the case in "indignation and surprise" over the government's insistent efforts to keep out of evidence the fact that C. E. Arnott, the alleged "master mind" of the conspiracy charged, was a duly appointed officer of the government as "chief stabilizer under the code."

"There just isn't such an office," John H. Lewin, of the government staff, interrupted, but Young insisted Arnott was appointed by the president and held the office at the time when the government says the "conspiracy" started.

"Why hasn't the prosecution brought a single witness from Washington?" Young demanded, adding the further challenge that the government knew the secretary of the interior and officials of the Bureau of Mines would "testify against them" if produced.

Economic Balance



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Pipe Line Activity

Crude Line From Luby Field Placed in Operation

CORPUS CHRISTI, Tex.—Amsco Pipe Line Co. is completing a 12-mile 4½-inch line from the Luby field, Nueces County, to its Clarkwood pump station, which connects to the company's terminal on the Corpus Christi ship channel. This gives the field its first outlet to tidewater. The line provides a capacity of 4,500 bbls. of crude-carrying facilities.

The completion of this line gives the Amsco concern, a unit of the American Mineral Spirits Co., much needed crude supply for its Corpus Christi refinery, which is processing painters' naphtha and burning oil.

Humble Pipe Line Extension To Bohago Area Reported

FORT WORTH, Tex.—Humble Pipe Line Co. plans to begin movement of crude oil through its newly constructed 6-inch extension line from Hobbs, N. Mex., to the Wasson area of northwestern Gaines County, Texas, and northeast to the Bennett field of Yoakum County. A 4-inch line was also extended for about 6 miles to the Denver field, and it is reported a further extension to the north is planned to connect to the Bohago area.

Utilities Pipe Line Co. to Lay Gas Line in Michigan Field

SAGINAW, Mich.—Mount Pleasant, Clare and Rosebush, towns almost completely surrounded by oil and gas fields, have been saved from immediate danger of gas famine due to decline of the reserves of Gas Corp. of Michigan, which serves fuel gas to practically every home, industrial plant and public institution in the three towns. The Public Utilities Commission has approved an arrangement under which Gas Corp. will borrow this winter 100,000,000 feet of gas to tide the three towns over the peak season of consumption. The commission also approved organization of Utilities Pipe Line Co. and the construction of a 13-mile pipe line to connect Gas Corp. lines with the pipe line through which Consumers Power Co. brings gas from the Broomfield area to supply the cities of Saginaw, Bay City, Midland and Lansing. Under the agreement approved by the commission, Gas Corp. is to deposit a cash guaranty of 24 cents per 1,000 feet for the gas it borrows, in case it is unable to supplement its supply sufficiently to allow it to repay the "loan" in gas.

The commission also gave its sanction to an experiment in extraction of gasoline and impurities from casinghead gas to make it usable as fuel. Gas Corp. has negotiated an agreement with oil operators in the Sherman field, Isabella County, for approximately 200,000,000 feet of casinghead gas and is reported closing a deal with Pure Oil Co. to extract the gasoline and render the gas suitable for mixing with the gas company's dry gas supplies.

Incorporators of Utilities Pipe Line Co. are Charles M. Sturkey and Warren J. Sommerville of Mount Pleasant, J. L. Boone of Ludington and Gas Corp. of Michigan.

Ready to Begin Laying Pipe For Line in Buckeye Field

SAGINAW, Mich.—With right of way complete for the new Bay Pipe Line Co. 33-mile line from the Buckeye Township oil field in Gladwin County to Bay City, owners expected to begin laying pipe at once. Delay in arrival of pipe has retarded construction, with all preliminary work accomplished, James C. Graves, president, said.

Construction also has started on the new Bay Refining Co. refinery at Bay City, at the mouth of the Saginaw River adjacent to the Dow Chemical Co. dock property. Foundations for the refinery have been completed.

The Bay Pipe Line Co. and Bay Refining Co. were founded by a group of independent oil producers in the Buckeye field. The companies have the same officers and directors.

General Pipe Line Operating Former Barnsdall Line

LONGVIEW, Tex.—General Pipe Line Co., with headquarters in Shreveport, La., has purchased an is now operating the former Barnsdall pipe line system in the East Texas field. This line was acquired when General American Oil Co. purchased Barnsdall's producing properties in the field, but the line has not been operating until the present time.

Thornburg-Craig Extension To the Iles Dome Field

A 3-inch gas line is being laid by Rocky Mountain Gas Co. to its Thornburg-Craig line with Texas Co. holdings in the Iles Dome field, Moffat County, Colorado. The line, a 4-mile spur, will furnish gas from the Morapas field for use as drilling and pumping fuel on the Iles area.

Richfield Oil Laying Gas Line in El Segundo Field

LOS ANGELES, Calif.—Richfield Oil is laying a $20,000 gas line to the new northwest end of the El Segundo field which will replace temporary lines laid when the sector was untried. Contracts have been signed with Apex, Wilshire, Government, Ruchti, Sunshine, Howard and Lakeside Oil companies to handle their gas production in the latter area.

Contract for New Crude Unit Awarded by Texas Company

HOUSTON, Tex.—Contract for the construction of a 16,500-bbl. atmospheric and vacuum distillation unit at its Port Neches, Tex., refinery has been awarded by the Texas Co. to Alco Products Co. of New York. The project is estimated to cost about $1,000,000.

Completed section of Valley Pipe Line Co.'s new 15-mile extension which connects the company's original system with production in Cameron, Hidalgo and Starr counties in Texas

Natural Gas

Two Price Reductions Made On Carbon Black for Tires

Two price reductions have brought carbon black down to 3¼ cents per pound, bags, in carload lots, from 4 cents a pound previously f.o.b. Texas points, and to .0460 cent per pound at New York, from the quotation of .0535 cent which had prevailed for some time. The prices are for immediate shipment. Correspondingly lower quotations have been effected for deliveries during 1938. Producers have inserted clauses in contracts protecting customers against further price declines.

The reduction in carbon black prices affects the grades used in the manufacture of tires, and the finer qualities produced for the ink and lacquer trades which range up to 45 cents per pound remain unchanged. Approximately 80 per cent of domestic consumption of carbon black is accounted for by the rubber tire industry.

To Drill for Gas on Detroit Lot Of Michigan Fair Grounds

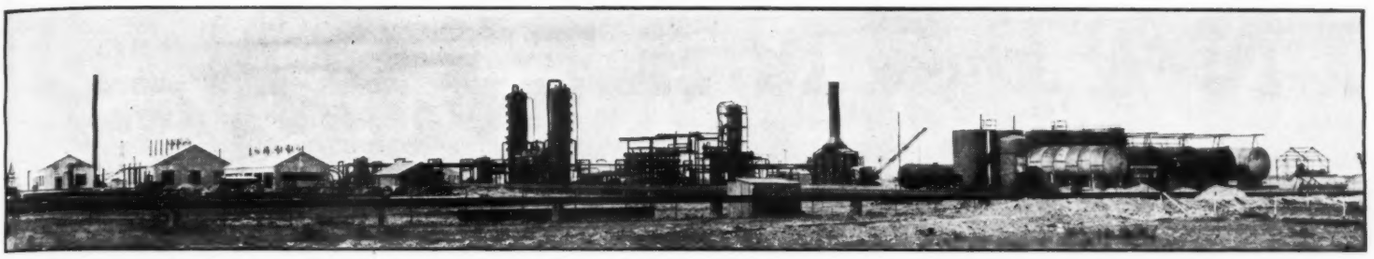
The Detroit grounds of the Michigan State Fair are to be the scene this winter of drilling in search for natural gas, the result of discovery of a gas seepage from a water well drilled there the past summer. Detroit gets its natural gas supply from the Texas fields.

Gas Exhibit at New York Fair

Architectural plans for a gas building and animated exhibit to cost $750,000 at the New York World's Fair 1939, were made public by Grover A. Whalen, president of the Fair Corporation.

In addition, Brooklyn Union Gas Co. and Consolidated Edison are spending $375,000 for gas mains and service preparations, and gas exhibitors have purchased $1,250,000 of Fair debentures, raising the total participation of the industry to $2,375,000.

The gas building (photograph on page 20) will stand on a plot of 87,042 square feet in the Community Interests Zone on a wide avenue radiating from the



Phillips Petroleum Co's new natural gasoline plant now under construction in the Goldsmith field, Ector County, Texas

Theme Plaza, the focal point of the main exhibit area of the exposition. The plot is S-shaped and 460 feet long. Its main entrance, at one end, will lead into a wide circular "Court of Flame" in which a large jet of gas will be kept burning like a torch. Four 90-foot pylons, suggestive of the grid points above the burner of a gas range, will rise high above the building and aid in forming the enclosure of the "Court of Flame."

At the other end of the building, in a three-sided patio shaded by trees, there will be a model all-gas house. It will present in working condition the various applications of gas in the home, for cooking, refrigeration, space and water heating and air-conditioning. All of these appliances will be of the latest and most efficient type.

Within the main structure an auditorium seating 350 persons is to be used to demonstrate the household use of gas and the presentation of educational programs by lectures, motion pictures and otherwise.

The gas industry intends going a step further in display of its products. Departing from previous custom, all gas appliances exhibited in its building are to be shown in the surroundings they would have were they in actual use. Devices used in kitchens will be displayed in reproductions of modern kitchens, heaters and air-conditioning mechanisms will be exhibited in basements or cellars, their usual emplacement in homes. Thus, the industry feels, there will be an additional opportunity to demonstrate new economies of space and new conveniences of arrangement of its various devices.

The gas building is to be erected by Gas Exhibits Incorporated, an organization of several hundred utility corporations and manufacturers of household gas appliances embracing practically all those located east of the Mississippi River. A crew of 100 is to be organized to provide guides and guards throughout the structure.

President of the exhibiting corporation is Hugh H. Cuthrell, vice president of the Brooklyn Union Gas Co. Its board of directors is composed of 10 utility company executives and an equal number of executives of appliance manufacturing organizations. Its office is at 60 East Forty-second Street, New York City.

Natural Gasoline

Richfield Enlarging Gasoline Plant in El Segundo Field

LOS ANGELES, Calif.—Richfield Oil Corp. is enlarging the daily capacity of its El Segundo natural gasoline plant to about 40,000 gallons, and is enlarging the plant's gas gathering system. The plant at present is producing about 25,000 gallons daily.

Humble Awards Contract for Southwest Texas Plant

HOUSTON, Tex.—Humble Oil & Refining Co. has awarded contract for the erection of a natural gasoline plant in the Heyser field of Calhoun County, Southwest Texas. The new plant will be of the well pressure absorption type, identical in design to the plant which Humble placed in operation at Dickinson two weeks ago. The plant has a capacity of 15,000 gallons of product, which will be shipped by tankcar from a loading rack adjacent to the plant.

Natural Gasoline Production Increased During September

Production of natural gasoline in the United States increased in September according to the report prepared by the Bureau of Mines for that month. The daily average production in September was 5,981,000 gallons, which was 241,000 gallons more than in the preceding month and 963,000 gallons greater than in September, 1936. Material increases were recorded in the Appalachian, Illinois-Kentucky-Michigan, and Oklahoma City fields.

Production of the various districts, in gallons, during the month was as follows: Appalachian, 5,176,000; Illinois-Michigan-Kentucky, 1,031,000; Oklahoma, 44,921,000; Kansas, 4,652,000; Texas, 56,056,000; Louisiana, 8,976,000; Arkansas, 940,000; Rocky Mountain, 7,046,000, and California, 50,626,000. Total production for the first nine months of 1937 amounted to 1,495,620,000 gallons as compared with 1,278,060,000 gallons in the like period of 1936.

Material withdrawals were made from stocks during the month, the total declining 32,046,000 gallons. The major portion of the decreases was in stocks at plants and terminals, which totaled 128,142,000 gallons on the end of the month as compared with 154,224,000 gallons on September 1. Shipments to jobbers and retailers and to exports in September totaled 27,510,000 gallons, or 5,628,000 gallons more than in August, 1937. The major portion of this increase was in exports which increased from 11,004,000 gallons to 14,070,000 gallons.

Vapor pressures continued to increase, the average of shipments to refineries and to jobbers and retailers rising, while the average of shipments to refinery-owned bulk plants decreased and shipments to exports remained the same. The weighted average vapor pressure of all shipments in September was 19.2 pounds compared with 18.7 pounds in August.

Refinery Projects

Plans Announced for New Louisiana Refinery

HOUSTON, Tex.—Southwestern Oil & Refining Co. has announced plans for the construction of a 5,000-bbl. refinery on the deep-water ship channel at Lake Charles, La. Cost of the new plant is placed at $500,000. The company placed on stream a similar plant several months ago at the General American Tank Farm & Terminal Co. site in Corpus Christi, Tex.

The proposed refinery will be the first in the Lake Charles area. It will process local Coastal Louisiana crudes and products will be shipped to coastwise and export markets. Harry E. Clark is president of the company, and other officers include George Howell, secretary, and Sam H. Jones, resident agent.

Bay Petroleum Completes New Refinery at Denver

DENVER, Colo.—Bay Petroleum Co. has completed construction of its new 3,000-bbl. refinery here and is now operating at capacity. A 900-bbl. Dubbs cracking unit was also constructed, and the plant will produce a complete line of refinery products. Cost of construction was estimated to be almost $1,000,000.

Officers of the company, which recently purchased Dickey Refining Co.'s McPherson, Kans., plant and also operators of a small plant at Cheyenne, Wyo., are: C. U. Bay, New York City, chairman of the board; M. H. Bobineau, president; R. V. Rodman, vice president, and H. E. Artitage, secretary-treasurer, all of Denver.

Two New Refineries Planned For Michigan and Ontario

COURTRIGHT, Ontario.—Interests represented by C. R. Murphy of New York have purchased the McGregor farm near St. Clair, Mich., and optioned 400 acres of water front property near Courtright, on the Canadian side of the St. Clair River. It is understood refining plants will be established at these points to serve Ontario and Michigan, both British and United States capital being interested.

Republic Building 10,000-Bbl. Unit at Texas City, Tex.

HOUSTON, Tex.—Republic Oil Refining Co. has started construction of a 10,000-bbl. combination skimming and cracking unit at its Texas City plant. The unit is being erected by National Supply Co. and will cost approximately $900,000. Construction is expected to require six months, and when completed will increase the plant's capacity to 24,000 bbls. daily.

Talco Asphalt to Hold Formal Plant Opening

FORT WORTH, Tex., Nov. 16.—Formal opening of Talco Asphalt & Refining Co.'s new plant at Mount Pleasant, Tex., will be held on November 18. An old-fashioned barbecue will be held on the refinery grounds, after which the dedication ceremonies will be held.

Turner Valley Operators Seek Establishment of Refinery

CALGARY, Alberta.—To facilitate marketing of surplus Turner Valley crude, a number of Alberta operators are considering the establishment of a refinery at some point convenient to the field. Efforts will probably be made to interest one of the major refining companies of eastern Canada in the project.

New Bay Refinery to Provide Outlet for Buckeye Field

SAGINAW, Mich.—Construction of a new 3,500-bbl. skimming plant at Bay City, Mich., has been started by Bay Refining Co

INTERNATIONAL

Shell Subsidiary to Obtain Poza Rica Extension

Tension between the Mexican government and foreign oil companies, brought to a snapping point by reports the Federal Board of Arbitration and Conciliation was prepared to order a large increase in wage payments, was eased slightly at the week-end when President Cardenas signed a contract to award the Royal Dutch-Shell controlled Mexican Eagle Oil Co., concessions on the remainder of proven acreage in the Poza Rica field.

Mexican Eagle previously held about 7,700 acres of the estimated 13,000 proven acres in the Poza Rica field. Actual confirmation of the concession must await further developments. Mexican Eagle assumes obligation to pay the National Petroleum Administration a royalty ranging from 15 to 35 per cent.

Efforts of the National Petroleum Administration to divert other parts of the national oil lands to private companies for development on substantial interest participation are not uncommon. In most cases the extent to which the National Petroleum Administration has insisted on participating has been prohibitive. In the particular case of the Poza Rica field, Mexico's newest prolific producing area, it is considered probable operations could stand a much heavier over-ride than in the leaner or unexplored sections.

Negotiations between Mexican Eagle and the government on the Poza Rica acreage had been under way for some time and approval of the contract by President Cardenas last week need not necessarily mean cessation of hostilities between the administration and privately-owned companies over the wage controversy.

Germany is reported negotiating with Mexico to purchase the quantities of Poza Rica production which would accrue to the National Petroleum Administration under its royalty participation. Machinery and electrical appliances are understood to be the implements of trade Germany has expressed willingness to supply Mexico in return for the National Petroleum Administration's oil.

H. Benz and Bentz Erck have been in Mexico for several weeks on a mission from Germany. Erck represents a Dresden bank and Benz is understood to represent the government, although confirmation has not been obtainable.

A dispatch to the Associated Press from Mexico City says the government will finance development of its own lands from revenues it receives from Aguila. The promoters would lend the government $5,000,000 in cash. They would build two 6,000-bbl. and one 8,000-bbl. refineries at a cost to the government of $4,000,000. They would underwrite construction in British shipyards of 10 merchant ships for coastwise commerce, at a cost to the government of another $4,000,000. They would drill 30 to 40 wells at a cost not to exceed $4,000,000.

The government would deliver 60 per cent of its Poza Rica oil field royalties which under terms of a new lease to the Aguila would not be less than 2,000 tons of oil daily for the first 10 months—to pay off the loans.

Greater U. S. Participation In Oil Imports by Italy

Italian crude oil imports from the United States have increased more than five fold during the first eight months of 1937 compared to the same period in 1936.

Taking into consideration the increased consumption of fuel oils in 1937, the interministerial petroleum commission of Italy has decided to increase by 20 per cent the 1937 quota for this petroleum product. The quota for raw materials for manufacture of white and transformer oils also has been increased by 20 per cent.

Imports of fuel oil during the first eight months totaled 858,023 tons, nearly 13 per cent more than in the same period in 1936. The United States is only a small supplier of fuel oil, but has contributed extensively to meeting Italy's greater requirements for lubricating oils, kerosene and gasoline.

Gasoline shipments from this country to Italy more than doubled in the first eight months compared to the same time last year; kerosene shipments are more than 20 times greater and lubricating oil imports from this country are up more than 30 per cent. Greater participation of United States in Italian petroleum trade is shown. This country supplied 23 per cent of the imports which totaled 1,771,103 metric tons. Out of 1,180,240 metric tons imported by Italy during the same time in 1936, the United States supplied a little more than 13 per cent.

Imports for the first eight months listed by products and by the volume drawn from the United States are shown in the accompanying table.

ITALIAN PETROLEUM IMPORTS

(Figures in metric tons)

Products—	Eight months 1937	Eight months 1936
Crude oil	576,062	206,877
From United States	263,606	50,894
White and transformer oil	543	617
From United States	417	498
Other lube oils	48,657	37,270
From United States	33,375	24,206
Kerosene	75,200	58,504
From United States	9,850	448
Gasoline	212,618	126,444
From United States	40,323	19,775
Fuel oil	858,023	750,528
From United States	58,440	64,540

Slight Decline in Shipments From Dutch West Indies

Declines ranging from 25 per cent to nearly 70 in shipments of crude, gasoline and kerosene from the Dutch West Indies have been registered during the first half of this year compared with the same period in 1936. On the other hand, shipments of fuel oil, gas and diesel oil have increased from 17 to more than 30 per cent. Total shipments dropped to 69,090,000 bbls., compared to 70,074,000 bbls., or about 1½ per cent.

Crude oil exports showed the greatest percentage in decline, from 5,162,000 bbls. in the first six months of 1936 to 1,579,000 bbls. for the first half of this year. Some of this is probably due to curtailed production when Venezuelan fields were shut down because of a strike. Furthermore, both the Lago Petroleum Corp. refinery at Aruba and the Shell plant at Curacao have been extended in capacity. Still another factor is increased production from competitive sources of supply.

Exports of gasoline dropped from 17,368,000 bbls. in the first six months of 1936 to 12,666,000 bbls. for the first half of this year, a decline of 27 per cent. Fuel oil exports increased to 41,907,000 bbls. compared to 35,687,000 bbls., a gain of more than 17 per cent, and exports of gas and diesel oil increased more than 31 per cent from 8,403,000 bbls. to 11,043,000 bbls.

New Refinery at Rio Grande, Brazil, Put in Operation

First crude oil for processing in the Ipiranga S.A., Companhia Brasileira de Petroleo's new refinery at Rio Grande, Brazil, was docked several weeks ago and the plant has started its first runs. The cargo consisted of 35,287 bbls., shipped from Eucador via the tank ship Tacito of the Cia. General de Combustibles, Buenos Aires. It was not indicated in reports whether the first full cargo coming from Ecuador represented a change in original plans. When the refinery project was first reported, it was said a three-year contract for crude had been negotiated by Ipiranga S.A. with Lobitos Oilfields, Ltd. (Shell), which produces in Peru.

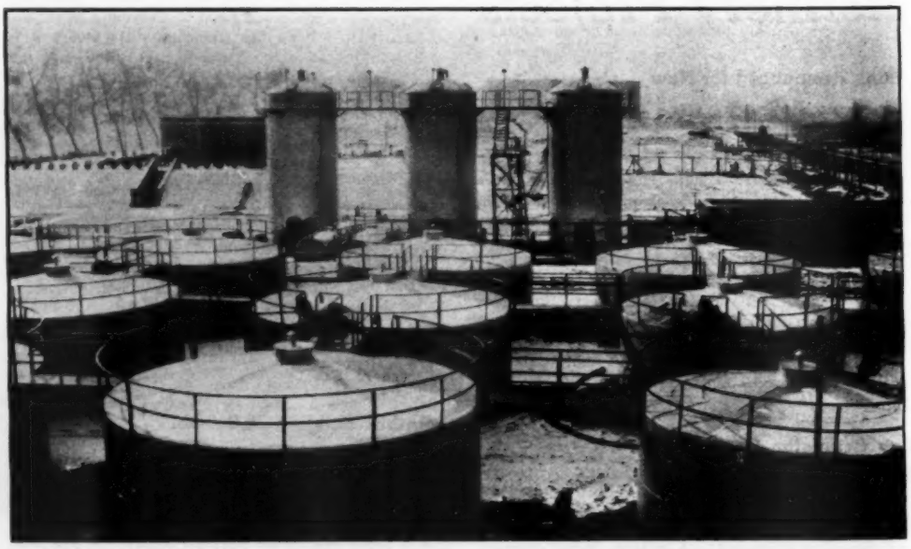
The new Ipiranga, S.A. refinery is designed to yield 30 to 35 per cent gasoline from Peruvian crude and the operating schedule calls for output of 600,000 to 700,000 liters of gasoline per month when maximum runs are attained. The state of Rio Grande de Sul consumes slightly more than 600,000 gallons of gasoline per month, most of which is supplied by Standard Oil Co., Royal Dutch-Shell, Texas Co. and Atlantic. Including gasoline and kerosene, it is estimated Standard has about 40 per cent of the business. Distribution for production of the new refinery is sought through existing facilities.

Brazil is still completely dependent on outside sources for its crude arguing against immediate establishment of a self-sufficient refining capacity. Surveys and drilling tests completed in the states of Rio Grande de Sul, Santa Catharina, Sao Paulo and Para have not resulted in discovering production. Three areas in Alagoas, Acre-Amazonas and Matto Grasso are being surveyed. In the state of Alagoas the federal government has been making surveys and tests in the vicinity of Macelo.

Austria's Crude Oil Output May Total Quarter Million

Austria's crude oil production now averaging approximately 21,000 bbls. per month probably will total more than a quarter of a million barrels for 1937. During the first seven months Austria's crude production totaled about 141,330 bbls. For the first four months the output was 78,330 bbls., an average of 19,566 bbls. per month. During the next three months the monthly average was 21,000 bbls.

The total for the seven months this year is almost three times the volume recovered during all of 1936 and was more than the entire production from 1932 to 1936, inclusive.



Refinery of Belgo Petroleum S.A., Terdonck, Belgium

ENGINEERING AND OPERATING SECTION

Presenting modern developments in operation of producing properties, refineries and gasoline plants, and pipe lines, including petroleum research in the field and laboratory

This Week

CONTROL AND DISPOSAL OF SALT WATER IN THE TALCO FIELD—By Mitchell Tucker ..... **Page 46**

Control and disposal of salt water has become a most serious problem to operators in the Talco field and is one confronting all producers. Steps taken to retard encroachment of flank water by reconditioning of wells are described and present methods of disposing of the salt water are discussed.

FUEL SYSTEMS OF 1937 AUTOMOBILES—By T. W. Legatski and R. R. Couch ..... **Page 48**

Due to absence of information on vapor losses from car fuel systems, it has been customary to regard systems as being adequate if they permit trouble-free operation on present motor fuels. That this was not entirely sound was demonstrated by a series of road tests, the results of which are discussed here.

FUEL-OIL PRODUCTION AND USE—By R. T. Goodwin ..... **Page 54**

Demand for fuel oils since 1930 has increased eight times as fast as the demand for gasoline. This rapid increase has had a decided effect on the refiner's production schedule and in order that he might better serve the burner oil industry it is suggested that the number of grades be reduced to simplify handling.

ILLUSTRATED OPERATING IDEAS ..... **Page 65**

Jack-operated chemical pump used in "down the hole" treating. Concrete slabs for well-servicing trucks. Ventilating engine room of pumping unit. Odorizing natural gas for domestic use.

LOCATING WATER SOURCE IS INITIAL STEP IN MAKING WELL REPAIRS—By C. R. Dale and H. Guyod ..... **Page 66**

The volume of water produced with oil in the United States constitutes a large part of the total amount produced, thus greatly increasing pumping costs. A discussion of the photoelectric method of determining the source of intruding formation water is given.

MEASUREMENT AND CONTROL IN REFINERY PROCESSES—By P. E. Darling ..... **Page 67**

In order that maximum results may be obtained in refining processes, it is essential that optimum conditions be maintained throughout the system. Thus measuring and controlling instruments constitute an integral part of operations. Various types of instruments are described, and methods of obtaining best operating results with them are pointed out.

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Relative properties of acid-refined and solvent-refined oils. Definition of petroleum. Catalysts suitable for hydrogenation and polymerization. Chemicals for the petroleum industry—ethylene dichloride.

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Has cinnabar been found in cuttings from Coastal Louisiana wells? Gas well's pressure fluctuates.

Control and Dispo s
Water in the Talco F

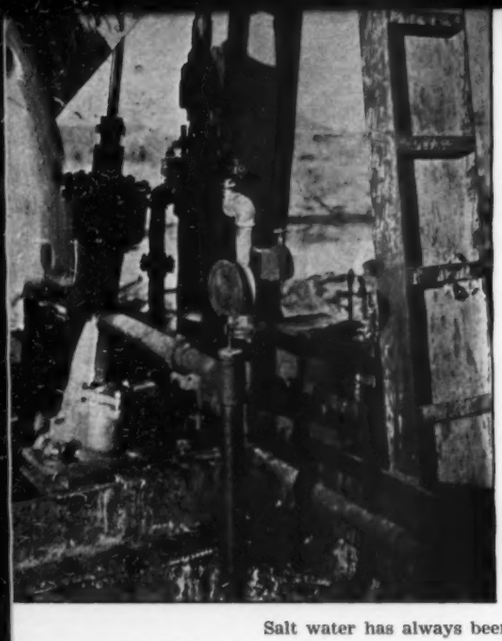


Fig. 1—Two 3- by 24-inch jerk pumps installed on pumping rig foundation

Salt water has always been the source of greatest trouble to operators in the Talco field. Today it is undoubtedly the field's most serious problem, and requires attention from four different angles, namely: (1) Efforts to retard encroachment of flank water by reconditioning of wells. (2) Problems involved in lifting of large water volumes under prevailing conditions. (3) Unusually difficult treating problems. (4) The disposal of that salt water which is produced.

As of November 1, 1937, there were 531 oil-producing wells in the Talco field, of which about 300 are producing water in quantities ranging from 1 to 90 per cent of total fluid lifted. Daily water withdrawal from the field closely approaches 20,000 bbls. per day. All wells in the field are now pumping, and new completions are equipped to pump immediately.

Salt Water Disposal

The disposal of about 20,000 bbls. of salt water per day is a problem before practically all operators in the field. Thus far a large portion of this water is being handled in a very unique and inexpensive manner by pumping it back down the casinghead of the oil wells, and discharging it back into a highly porous and thick water sand.

The Nacatoch sand, occurring from 850 to 1,000 feet in depth, is about 100 feet thick, and very porous. Prolific water volumes are held in this sand reservoir at low pressures. In fact, this water sand has always constituted one of the most difficult drilling problems in the field. One test of the formation showed it capable of flowing a full 12-inch stream of water estimated from 50,000 to 60,000 bbls. daily, with a rock pressure of only 50 pounds (indicating its highly permeable character).

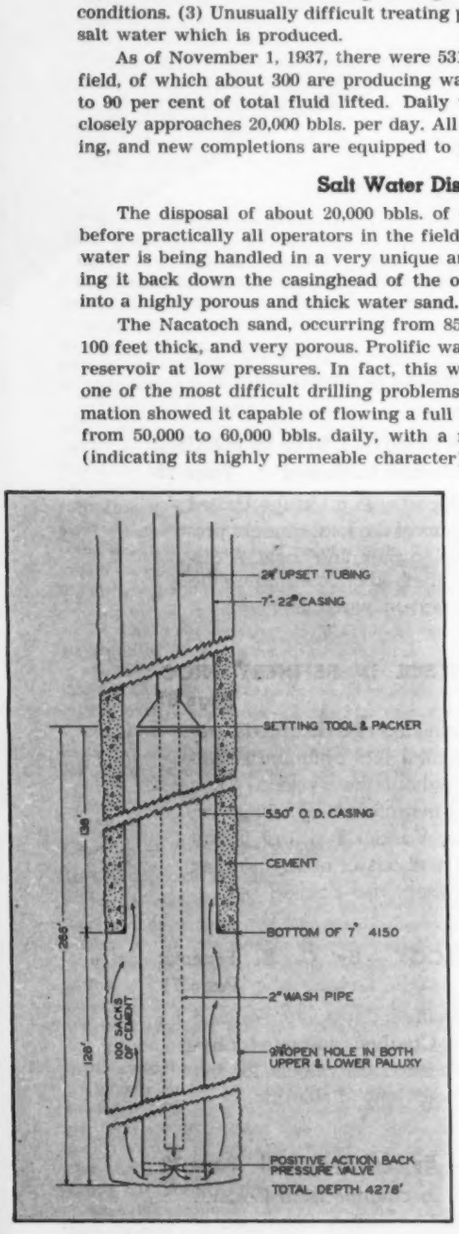


Fig. 3—Short string squeeze job

Most Talco wells are constructed with only the surface pipe and the producing string. Surface pipe lengths vary from 60 to 300 feet, depending upon individual wishes of the operators. Salt water is now being introduced back into the same wells from which it is produced, between the surface pipe and the oil string. There is only the one important salt water reservoir between the surface and the cement around the oil string. Small 3-inch by 24-inch "jerk" pumps are installed on the pumping rig foundation below the walking-beam, and 2-inch pipe is used as a pitman or plunger extending down from the beam to connect through a universal joint into the pump. Position of the pitman upon the beam controls the cycle of the injection pump. Where water volumes are very large, two such pumps have been installed below the beam. Figure 1 shows such an installation. A 2-inch line runs from the salt water pit, and the fluid is pulled into the pump and discharged out the other side through a 2-inch pressure gauge and into the bradenhead between the surface pipe and the oil string. Pressures of from only 50 to 125 pounds are required for this injection. Volumes up to 2,500 bbls. of salt water per day have been put back into the Nacatoch sand in one well.

Consideration is now being given by some of the larger operators in the field to drilling one or more large-diameter salt water injection wells to this level.

Water Control

Of course, the most effective point to strike at this water problem is in encroachment control at its source. Important progress has been made in this direction as over 100 wells in the field have been reworked, squeezed, or set short casing strings in an effort to minimize water production. In fact, operators are going so far as to shut off thick oil-bearing sands in order to reduce water volumes. Recent advancements in equipment, cements, and technique used in remedial work of this kind has made possible a large percentage of successful jobs. All new completions are made in the light of experience gained from other wells, with a view to minimizing the movement of flank water through the producing formation.

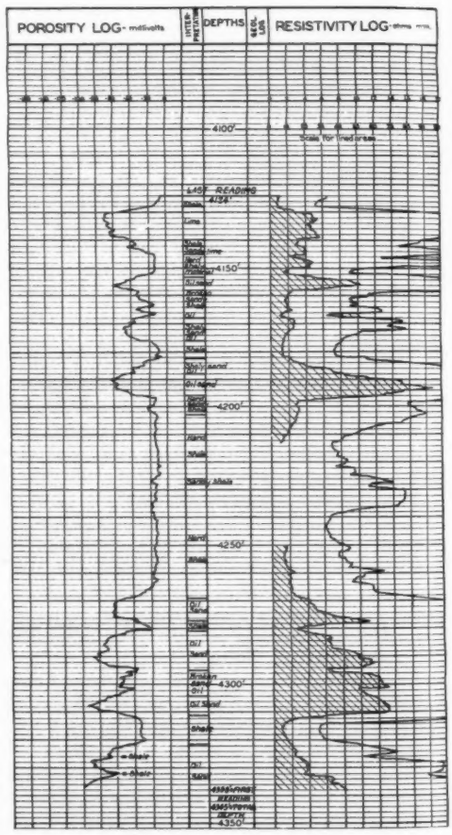


Fig. 2—Typical electrical survey of the Paluxy sand body in a Talco townsite well, showing marked division between the upper and lower sections of the formation

Figure 2 presents a typical electrical survey of the Paluxy sand body in a townsite well. It will be seen that the saturated sands are distinctly divided into two parts throughout the 214 feet of section. A thorough knowledge of the contents and characteristics of the two portions of this body is a prerequisite to any successful remedial work having as its purpose the control of water encroachment.

The Paluxy member of the Comanche series (Lower Cretaceous) is composed of red sands, shale and lime, and is a distinct change from the marine beds of limestone, shale and sand found in the Upper Glen Rose of the Gulf series, which immediately underlie the Paluxy. Accumulation in this bed occurs on the upthrow side of the Mexia-Balcones fault system, having a displacement of about 600 feet.

A 24-degree gravity oil is produced from the upper portion of this sand body, and relatively little trouble is experienced in its lifting, treating or transportation. Total thickness of the Upper Paluxy is about 60 feet, and constitutes the great bulk of Talco's present economically recoverable reserve. Extraneous water is rare in this sand, except along the southeastern flank of the field which is low structurally. Connate water in material from 20 to 26 per cent porous is estimated to be from 11 to 14 per cent.

sal of Salt

Field

By MITCHELL TUCKER

Field scene at Talco, from which affiliated producing companies are furnishing crude requirements for Talco Asphalt & Refining Co.'s new plant. Salt water disposal has become a serious problem to operators in this field

Between the Upper and Lower Paluxy, a section of from 40 to 70 feet of hard impervious shale occurs. The lower producing zone carries a 14-degree gravity asphaltic base oil, together with large quantities of flank encroaching water, much of which is in an emulsified form with the oil when recovered. Practically all the large water producers have been drilled through both the upper and lower saturated levels. Some have set pipe on bottom and selectively completed by perforating in both levels, and others have left the entire sand body open.

The occurrence of encroaching water is from three known sources. In the densely drilled downsite area, which is near the peak of the structure, a good portion of the water is thought to be traveling laterally up the fault and across the Lower Paluxy to the very low-pressure well bores. Excessive withdrawals of fluid in this area further encourages this movement of water. Wells drilled in any portion of the field into the Lower Paluxy are receiving their water from edge encroachment. Low structural wells in the southeastern portion of the field have been the only ones to show any edge water in the Upper Paluxy, and volumes thus far have been small from this source.

Due to the presence of highly permeable channels in the lower water-bearing sand, wells are directly affected by the performance of their offsets, and the reconditioning of one well will be quickly felt at nearby locations. For that reason, a united effort of all operators is necessary to effectively check water encroachment and use its motivating force as a factor in recovering the greatest ultimate oil, rather than a detrimental element in the reservoir. Due to the close similarity between the specific gravity of the low-grade oil and the relatively pure water in the Paluxy, bypassing or emulsification of the fluid is hard to prevent.

There are three types of remedial work being used to seal off the water and much of the oil-bearing sand in the Lower Paluxy. In those wells which originally were completed by setting casing on top of the sand, exposing both the oil- and water-bearing sands to open hole, the short string squeeze job is being effectively used. Figure 3 illustrates a typical workover of this type. A total of 266 feet of 5.50-inch casing was used to bottom, 138 feet lapping over into the 7-inch string and 128 feet extending from the 7-inch casing seat to bottom. A setting tool and packer is used on top of the short string, and a positive action back-pressure valve on bottom. The cementing string from the setting tool to the surface is 2½-inch upset tubing, and 2-inch wash tubing is used below the packer. In this particular job, 100 sacks of slow action, highly pumpable cement was pumped out through the back-pressure valve on bottom of the short string, and out into water-bearing formations and up between the overlap between the 7-inch casing and the short string. A maximum pressure of 1,400 pounds was used on this job. After the wash tubing is lifted out through the setting tool, and tubing pulled, the liner-setting tool is engaged by striking it, and the canvas or canvas-leak packer is firmly set. Recirculation on this job revealed that a total of 4 sacks remained in the formation, presumably in water-bearing sands. After cement setting time, the gun perforator is used to open the Upper Paluxy clean oil sand to production. Quantities of water up to 95 per cent have been successfully shut off by this method.

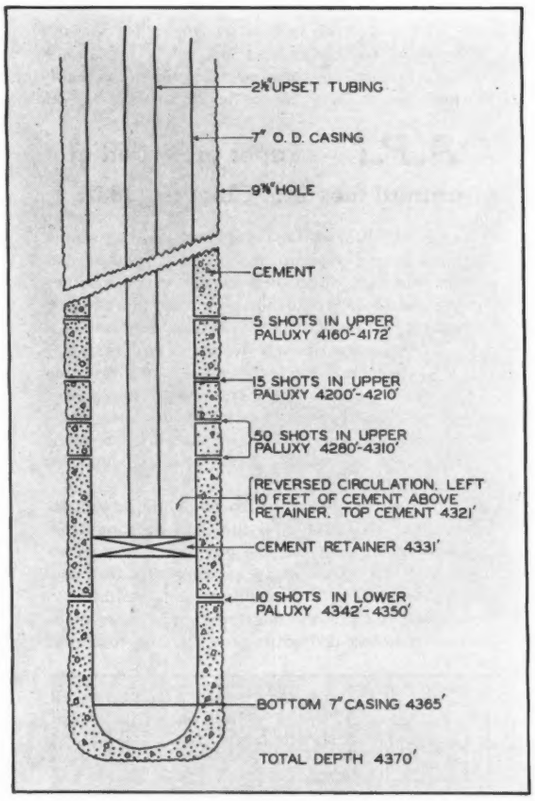

2½" UPSET TUBING
7" O. D. CASING
9⅞" HOLE
CEMENT
5 SHOTS IN UPPER PALUXY 4160'-4172'
15 SHOTS IN UPPER PALUXY 4200'-4210'
50 SHOTS IN UPPER PALUXY 4280'-4310'
REVERSED CIRCULATION. LEFT 10 FEET OF CEMENT ABOVE RETAINER. TOP CEMENT 4321'
CEMENT RETAINER 4331'
10 SHOTS IN LOWER PALUXY 4342'-4350'
BOTTOM 7" CASING 4365'
TOTAL DEPTH 4370'

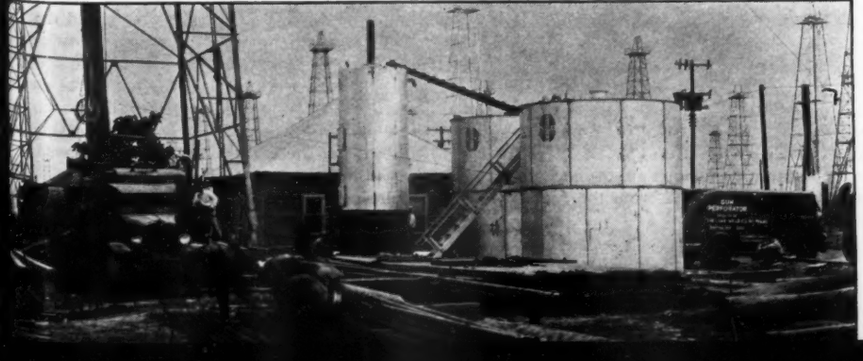
Fig. 4—Squeeze job through perforations

In those wells which originally drilled through both the Upper and Lower Paluxy sand, set casing on or near bottom, and perforated in both zones, a "perforation squeeze job" is being very successfully employed. Figure 4 illustrates a typical workover of this type. Here the 10 shot holes in the Lower Paluxy were cemented off, reducing water volumes from 60 per cent to clean pipe line oil. The cement retainer is run on 2½-inch upset tubing and set high enough above the perforations to be cemented off to permit leaving a suitable size cement plug above the retainer body. A total of 70 sacks of new-type specialty cement was used, after breaking the formation down with water at a maximum pressure of 2,850 pounds. Total cementing time was 26 minutes, and a maximum pressure of 1,750 pounds was applied while injecting cement. Tubing was then raised 11 feet, circulation reversed, and 10 feet of cement left above the retainer. Volumetric calculations of returns indicated that a total of 10 sacks of cement went into the formation.

As a third type of remedial work, and of a temporary nature, some operators have successfully set trip packers between perforations in the 7-inch casing to shut off water coming from lower zones. The outstanding example of this type reduced water volumes from 42 to 1 per cent. Others have used this type of packer temporarily to give them a reliable indication of what to expect from a perforation squeeze job applied to the same horizon. Although all three of these typical jobs shut off some oil in the Lower Paluxy, they leave the hole in such a condition that this zone can later be opened again to production if it becomes economically desirable to do so.

Pumping

The lifting problem at Talco includes a wide variety of difficulties, including high polish-rod loads for some of the units employed, sulfur corrosion, caving formations, frequent well servicing, high fuel costs, etc. In addition, wells making appreciable volumes of water must be handled at a cycle which will minimize coning or by-passing of the water up through the oil column while pumping (both fluids having practically the same specific gravity). The rate of pumping also has its effect upon the tightness of the oil-water emulsion, once recovered. The long stroke has been found most desirable to meet the situation imposed by the above-mentioned conditions, a stroke ranging from 12-48 inch to 16-40 inch generally being used by operators.

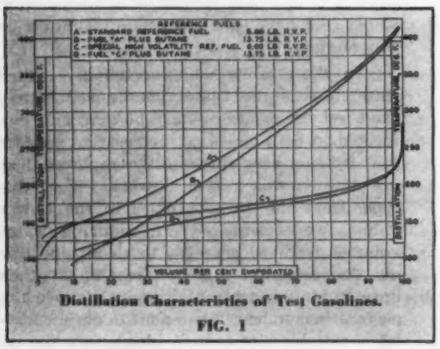


Reconditioning a large water producer in the Talco townsite. Gun perforator is being used after setting a short string to bottom of the well

Fuel Systems of 1937 Automobiles

By T. W. LEGATSKI* and R. R. COUCH**

The Pawhuska road test, the results of which are dealt with in this paper, were jointly conducted by the Natural Gasoline Association of America and the Western Petroleum Refiners Association during the summer of 1937. In the course of this work 251 separate tests were run on 9 cars. The tests involved about 10,000 miles of driving over a selected course, and required three-months' time to complete. Although the detailed



Distillation Characteristics of Test Gasolines.

FIG. 1

studies of the information obtained are only partly completed, the work is sufficiently far advanced to permit this preliminary report.

Purposes of the Pawhuska Road Tests

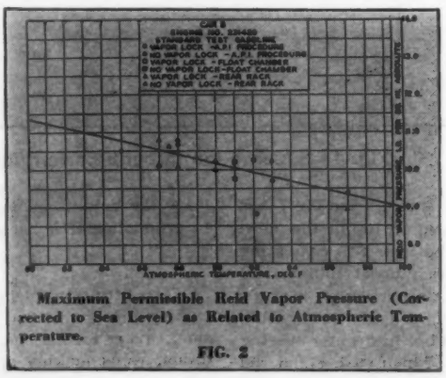
The purposes of the tests will be more readily apparent after consideration has been given to the present status of the vapor-lock problem in its relationship to the fuel problem. Why this continued interest in fuels and fuel systems? In brief, the interest of the petroleum industry in car fuel-system designs is prompted by the observation that inadequate fuel systems impose restrictions on gasoline raw materials. This has been known for some time, and many papers have been given on that general subject. Besides the matter of excluding from consideration large volumes of raw materials, inadequate fuel systems also result in operating difficulties such as vapor lock, in lost mileage through losses of vaporized gasoline at various points in the system, and in quality losses such as decreased anti-knock value, decreased ease of starting, etc. These other characteristics of poor fuel systems have likewise been known for some time. Because the fuel system of the various makes and models of cars are far from being equal in their ability to handle fuels without operating troubles and without excessive losses, fuel manufacturers have for years been constrained to observe specifications which would result in substantially trouble-free operation in the poorest systems. Entirely apart from the restrictions which such a situation imposes on fuel manufacturers, the cars which could handle a better fuel are definitely penalized. In substance, all studies to date have indicated that better fuel systems would benefit the car designers, the fuel manufacturers, and the car owners. Better systems, besides making better use of our present-day gasoline, would aid in paving the way toward better and cheaper fuels. In view of these known advantages, it is indeed surprising that little progress has been made in the direction of improved systems.

Why this lack of progress? Is it due to failure on the part of designers, including the "body artists," to appreciate fully this general situation? Is it due to a feeling that "merely getting under the wire" on vapor lock is sufficient? If so, isn't it possible that the lack of interest is due to lack of information on some of the effects traceable to poor design, with no methods available for ob-

A.P.I. — Paper presented at annual meeting, Chicago, 1937.

taining that information? True, we have a number of road-testing procedures. Do such methods actually rate cars, or do they merely tell us whether a fuel would or would not give trouble-free operation? What do we know of minimum mileage losses traceable to poorly-designed fuel systems? What do we know of fuel-quality losses incurred in passing through such systems? The answer is—very little. Clearly, questions of test adequacy, true rating of systems, losses, etc., are questions which merit answers—more complete answers than we now have.

This brings us to the purpose of the Pawhuska road tests. As outlined by the steering committee in charge of this work, the purpose was a three-fold one, viz.: 1, to study existing road-test procedures critically to determine their limitations; 2, to work towards the development of more satisfactory road-test procedures for the determination



Maximum Permissible Reid Vapor Pressure (Corrected to Sea Level) as Related to Atmospheric Temperature.

FIG. 2

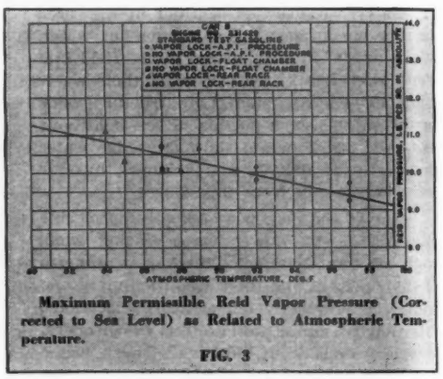
of permissible vapor pressures, volumetric losses, and quality losses; and 3, to obtain as much and as complete information as possible on the fuel-system characteristics of representative 1937 cars.

Test Procedures

The test methods employed to obtain information on permissible vapor pressures of fuels for trouble-free operation at various atmospheric temperatures, on volumetric losses from the fuel systems, and on fuel-quality losses, will be briefly described in the following paragraphs.

A. Permissible-Vapor-Pressure Test Procedure

The procedure involved the use of one test method with three alternative types of fuel-handling equipment. In technical circles, the method is known as the 1937 tentative standard vapor-lock road-test method. In brief, it calls for test runs on the car at various atmospheric temperatures, preferably above 85 deg. F., using products of closely-specified distillation characteristics and of different vapor pressures. For convenience, the fuel can be designated as the standard vapor-lock reference



Maximum Permissible Reid Vapor Pressure (Corrected to Sea Level) as Related to Atmospheric Temperature.

FIG. 3

fuel. The "vapor-locking vapor pressure" is considered in this test as being the highest vapor pressure in a fuel which will permit a car to be started and accelerated to 55 miles per hour after a 5-min. stop at the end of an extended period of driving at constant speed. Samples are withdrawn from the car tank at the end of each observation of car behavior, for check purposes. It is obvious that permissible vapor pressures thus determined will be those for one of the worst conditions of operation; as, after getting under way, a car can normally handle a product of somewhat higher vapor pressure with no apparent operating difficulties. The method is inherently the soundest one for arriving at permissible vapor pressures, because the conditions are identical with those observed in normal driving. The most serious shortcoming of the method as a routine test procedure is its unwieldiness. This is due to its being a "cut-and-try" method, necessitating many trial blends and many miles of driving for a complete set of data on any one car. Alternative methods for handling the fuels in this test have been suggested as a step toward simplification. All such suggestions have been looked upon with disfavor; because, in each instance, modifications in the conventional fuel system were required, and it was feared that these would seriously affect the results. Notwithstanding past objections, three alternative methods for handling fuels were used in the course of the Pawhuska tests for the purpose of comparing results with those obtained in the conventional method. Each of these alternative methods merits a brief description.

Alternative No. 1, designated as the "rear-rack

*Phillips Petroleum Co., Bartlesville, Okla.; chairman, Western Petroleum Refiners Association-Natural Gasoline Association of America Road-Test Steering Committee.

**Phillips Petroleum Co., Bartlesville, Okla.; director, Western Petroleum Refiners Association-Natural Gasoline Association of America Road-Test Program.

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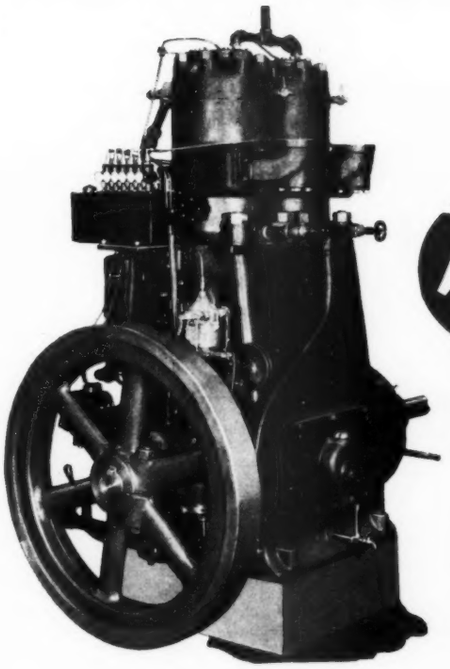

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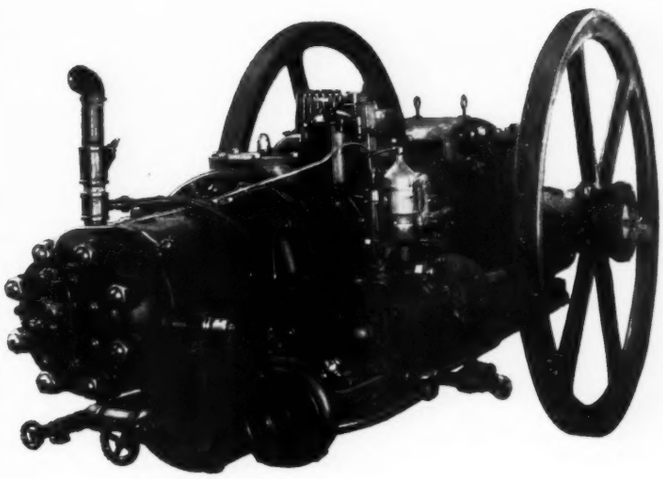

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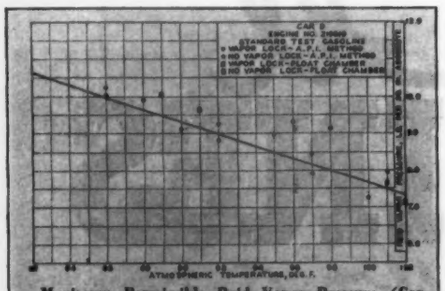
AND BRANCH STORES

method," involved the use of a number of 1-gal. fuel containers mounted in a rack on the rear bumper of the car. A three-way valve was inserted in the regular fuel line close to the car tank in a fashion so that fuel could be used either from the car tank or from the gallon containers mounted on the rack. Fuel from the car tank would be used during the warm-up period and from the 1-gal. containers for the actual vapor-lock tests. In normal testing each container would be filled with a fuel of different vapor pressure, so that observations could be conveniently made on a range of products in any one test run. At the conclusion of each observation, a check vapor-pressure determination would be made on the remaining fuel in the container.



Maximum Permissible Reid Vapor Pressure (Corrected to Sea Level) as Related to Atmospheric Temperature.

FIG. 4

Alternative No. 2, designated as the "float-chamber method," involved the use of three 5-gal. containers manifolded together and mounted in the rear-seat space of the car. The feed line from these containers passed to a float chamber mounted on the rear bumper of the car on a level with the car tank. The float chamber, designed for the purpose of eliminating the effect of a static head of gasoline on the system, was of one quart capacity, and delivered directly into the car fuel system at the tank connection. In the course of testing, each of the three 5-gal. containers would be filled with a fuel of different vapor pressure. Warm-up and vapor-lock runs would be made on each tank. At the conclusion of each observation, a check vapor-pressure determination would be made on a sample of gasoline drawn from the float chamber.

Alternative No. 3, designated as the "proportioning-valve method," was identical with No. 2 except that two 5-gal. fuel tanks mounted in the rear-seat space delivered through a manually-controlled proportioning valve, and from thence to the float chamber on the rear bumper. In the normal operation of this equipment, test fuels differing from each other by 3 or 4 lb. in vapor pressure would be prepared and charged into the two 5-gal. fuel tanks. The proportioning valve, designed so that it would mix fuels accurately in increments of 5 per cent, would be set at a desired point and road-test observations made, culminating in the withdrawal of a check sample from the float chamber. By trying a number of settings in rapid order, the complete range of vapor pressures could be conveniently explored in a relatively short period of time.

The actual details of the testing procedure, methods of making observations, etc., were kept the same in each case in order to facilitate comparisons of these various alternative methods of handling test fuels.

In order to accumulate information on other possibly more suitable types of test fuels, duplicate runs were made with a product considerably more volatile than the previously-designated standard reference fuel. This choice was prompted by the opinion that a considerably more volatile reference fuel might afford one means of differentiating between systems which owed their fuel-handling ability to low temperatures and those which owed their fuel-handling ability to excessive wasting of vapors. The volatility characteristics of both pairs of reference fuels are shown in Fig. 1. All of these fuels were prepared in quantities sufficient for the entire test program.

TABLE 1—MAXIMUM PERMISSIBLE REID VAPOR PRESSURES AS DETERMINED FOR ALL CARS AND FUELS

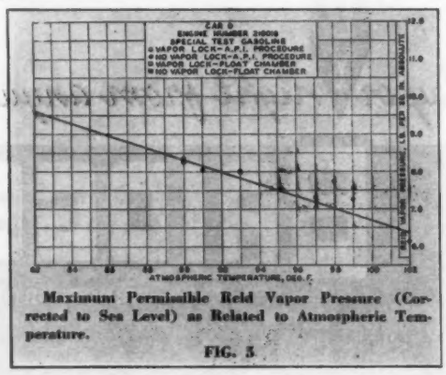
Car designation	Type reference fuel	Atmospheric temperature (°F.) 80	90	100	Predicted* Reid vapor pressure at 100° F.	Observed slope or conversion factor
A	Standard	12 23	10 62	9 04	9 42	0 158
A	Special	11 80	10 20	8 60	9 00	0.160
B	Standard	11 38	10 15	8 96	8 95	0 119
B	Special	11 30	10 15	9 02	8 95	0 113
B′	Standard	11 42	9 10	6 82	7 90	0 228
B′	Special	9 23	7 96	6 79	6 76	0.117
C	Standard	12 00	10 12	8 92	8 92	0 120
C	Special	12 02	9 08	6 75	7 88	0 223
D	Standard		9 30	7 70	8 10	0 160
D	Special	9 93	8 30	6 70	7 10	0 160
E	Standard	10 87	8 82	6 80	7 62	0 202
E	Special	8 30	7 06	5 82	5 86	0 124
F	Standard	.....	9 27	7 93	8 07	0 134
F	Special	.....	9 40	8 08	8 20	0.132
G	Standard	11 47	9 90	8 35	8 70	0 155
G	Special	10 93	8 90	6 86	7.70	0 204
H	Standard	.....	10 01	8 20	8 81	0 181

*Determined by subtracting 1.2 lb. from the observed permissible vapor pressures at 90° F.

B. Vapor-Loss Road-Test Procedure

In the absence of a generally-accepted procedure for determining losses from fuel systems through evaporation, a new method was devised and studied. The nature of losses and the means employed by fuel-system engineers to avoid operating troubles makes the problem of loss measurement a difficult one. Obviously, any method which involves attachments to the fuel system, or which involves changes in the location, size, etc., of carburetor vents, will tend to affect losses, and will probably yield fictitious results. The soundest method would be one requiring no changes whatsoever in the fuel system. This requirement can be met by relying upon an over-all material balance of the fuel in the system. Such a procedure would require a closely-specified fuel, with provisions for drawing periodically representative samples from the car tank and the carburetor bowl.

Sampling from the car tank presented no problem. To obtain carburetor-bowl samples, a small hole was drilled and tapped in the base of the bowl sufficiently far removed from the main jet to avoid robbing the jet. An insulated copper tube of small diameter, fitted with a stopcock delivering into a chilled receiver, completed the assembly. In a series of constant-speed driving experiments, various rates of withdrawal of samples were studied. A rate was decided upon which was equivalent to between 1 and 2 per cent of the normal car consumption at that speed. Rates as much as six times greater than the standard rate of withdrawal were found to have no noticeable effect on sample characteristics.

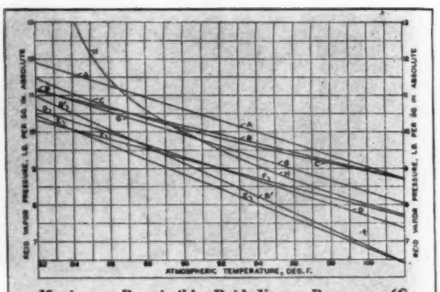


Maximum Permissible Reid Vapor Pressure (Corrected to Sea Level) as Related to Atmospheric Temperature.

FIG. 5

Various methods for arriving at the material balance on the fuel were considered. After careful study the conclusion was reached that a comparison of the densities of fuel in the car tank and residual fuel in the carburetor bowl had promise of yielding the desired information. Such density values should reflect losses if the volatility characteristics of the fuel are closely specified.

A series of laboratory experiments on an improvised fuel system, involving loss determinations through simple distillation and through flash vaporization, supplemented by density determinations on all products, supported this conclusion. The results were further substantiated by careful measurements on cars under test. In substance, the results indicated that each change in gravity of 1 deg. API was accompanied by a loss of 3.5 per cent by volume. The method is applicable to the measurement of losses of 10 per cent or less, and indicates the minimum loss for the observed gravity change.



Maximum Permissible Reid Vapor Pressures (Corrected to Sea Level) for Various Atmospheric Temperatures, Standard Reference Fuel Plus Butane.

FIG. 6

The normal procedure for making vapor-loss measurements consisted of sampling the contents of the car tank after the car had been thoroughly warmed up. A 90-cc. sample of residual carburetor-bowl liquid was then continuously drawn while driving a distance of 30 miles at average speed. At the conclusion of the run a second sample was taken of the fuel in the car tank. The difference between the densities of the initial and final samples in the car tank was taken as the index of tank losses. The difference between the average density of the fuel in the car tank and the carburetor- bowl sample was taken as the index of bowl losses. All densities were determined on a Westphal balance. A calibration curve of minimum loss vs. density change for the fuel used made the matter of conversion to terms of loss a simple one. The fuel used in all vapor-loss tests was the previously-designated standard vapor-lock reference fuel.

C. Octane-Number-Loss Procedure

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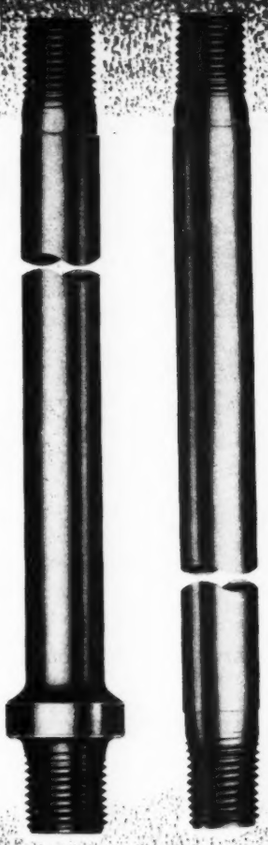

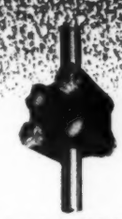

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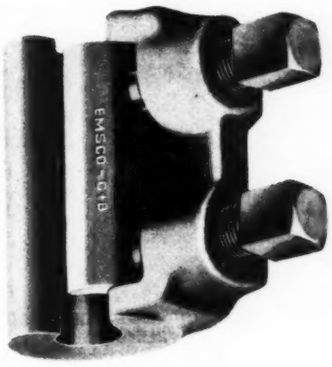

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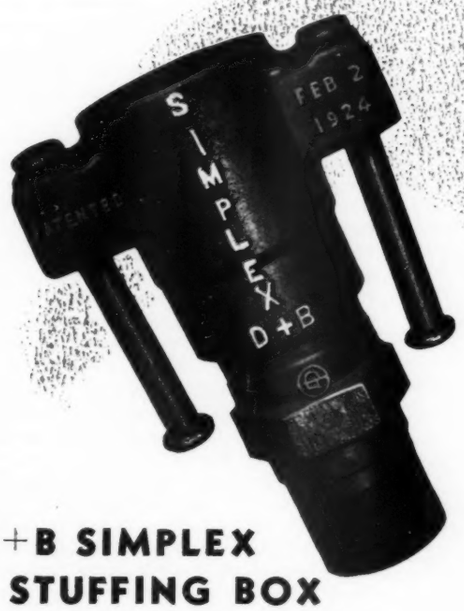

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TABLE 2—SUMMARY OF FUEL-SYSTEM TEMPERATURE OBSERVATIONS

(Increase in temperature above atmospheric)

Car Identification		Car "A"		Car "B"		Car "C"		Car "D"		Car "E"		Car "F"		Car "G"	
		Stabilized	After 5-Min. Stop	Stabilized	After 5-Min. Stop	Stabilized	After 5-Min. Stop	Stabilized	After 5-Min. Stop	Stabilized	After 5-Min. Stop	Stabilized	After 5-Min. Stop	Stabilized	After 5-Min. Stop
Rear tank	Average	18	4	1	0	5	16	—1	4	5	15	12	5	13	11
	Maximum	33	6	5	4	10	24	9	18	15	20	25	14	19	27
	Minimum	7	3	—4	—4	—2	9	10	—7	—8	7	2	—5	2	3
Fuel-pump inlet	Average	18	30	22	33	17	39	29	50	25	28	35	38	26	32
	Maximum	23	35	24	39	20	42	36	60	32	47	42	45	31	37
	Minimum	14	26	17	27	8	34	22	45	20	20	32	8	20	25
Fuel-pump outlet	Average	27	33	29	38	38	85	48	91	27	69	44	41	34	42
	Maximum	34	37	33	40	45	100	58	113	35	82	48	48	39	46
	Minimum	21	28	26	34	30	68	39	69	20	54	38	14	29	36
Carburetor bowl	Average	28	30	28	35	22	43	41	48	30	46	53	53	37	44
	Maximum	31	36	34	40	24	49	47	62	36	58	67	66	44	53
	Minimum	29	24	25	32	19	37	35	36	24	39	41	41	28	34
Underhood	Average	37	22	33	39	15	44	19	41	29	43	46	51	46	64
	Maximum	43	26	38	45	19	54	28	59	34	68	52	59	54	86
	Minimum	34	16	25	36	9	31	7	12	22	25	39	41	43	34
Atmospheric temperature	Average	87	87	92	92	90	90	95	95	91	91	97	97	88	88
	Maximum	89	88	97	98	96	97	106	105	100	101	104	104	96	96
	Minimum	83	83	85	86	80	80	86	86	80	80	84	86	82	82
Number of tests			4		8		9		22		16		12		11

TABLE 3—PROBABLE VAPOR LOSSES FOR CONDITIONS OF STEADY DRIVING AT 55 MILES PER HOUR—ALL CARS

(Losses in Terms of Volume Per Cent)

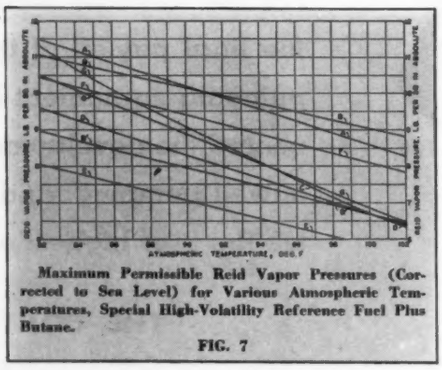
	Atmospheric Temperature (Deg. F.)	Average Motor Fuel of 8.0 Lb. Reid Vapor Pressure			Average Motor Fuel of 9.0 Lb. Reid Vapor Pressure		
		Carburetor Bowl	Rear Tank	Over-all	Carburetor Bowl	Rear Tank	Over-all
Car A	90	1.02	1.40	2.42	1.52	1.66	3.18
	100	1.67	1.89	3.56	2.17	2.25	4.42
Car B	90	0.93	...	...	1.43	...	...
	100	1.55	...	...	2.05	...	...
Car C	90	0.65	...	...	1.15	...	...
	100	1.20	...	...	1.70	...	...
Car D	90	1.57	...	...	2.07	...	...
	100	2.20	...	...	2.68	...	...
Car E	90	1.00	1.30	2.30	1.55	2.30	3.85
	100	1.40	3.30	4.70	1.90	4.20	6.10
Car F	90	1.72	1.00	2.72	2.22	2.00	4.22
	100	2.33	2.70	5.03	2.80	3.70	6.50
Car G	90	1.40	1.50	2.90	1.90	1.85	3.75
	100	1.95	2.09	4.04	2.45	2.55	5.00

minations made on residual gasolines, prepared in the course of the laboratory studies on the vapor-loss method, indicated that vapor losses could be related to octane losses. Ten determinations made on residual samples of the 70-octane ethylized vapor-lock reference fuel indicated a loss of from 0.25 to 0.3 in octane number for each per cent loss in volume, or a loss of one octane number per degree API loss in gravity. This relationship was a consistent one for volumetric losses of 10 per cent or less. No attempt was made to measure the possible effects of volumetric losses on road octane numbers, although there is some reason to believe that road octane numbers might be even more adversely affected.

Results

The nine cars tested included those makes of low-, medium-, and high-priced cars which are encountered in the largest number. All nine of the cars were examined to determine permissible vapor-pressure-temperature curves when using the standard reference fuel. Eight of these cars were also examined to determine permissible vapor-pressure-temperature curves when using the more volatile special reference fuel. Observations in the case of seven cars included, besides atmospheric temperatures, the temperatures of the car tank, inlet and outlet temperatures at the fuel pump, carburetor-bowl temperature, and water-jacket, underhood, and crankcase temperatures. Six of the cars, two in the low-price bracket and four in the medium- to high-price bracket, were examined to determine volumetric losses from their respective fuel systems. Since a detailed description of the results on each car would be time-consuming, the discussion will be confined to typical results on representative cars followed by a summary of all results.

Fig. 2 shows the permissible vapor-pressure-temperature curve for car "B" when using the standard reference fuel. The corresponding curve for the considerably more volatile reference fuel is shown in Fig. 3. This particular car is one of the low-price group. The similarity in the two curves is worthwhile noting; as, apparently, the volatility of the fuels has had no influence on the results. The different fuel-handling methods employed in



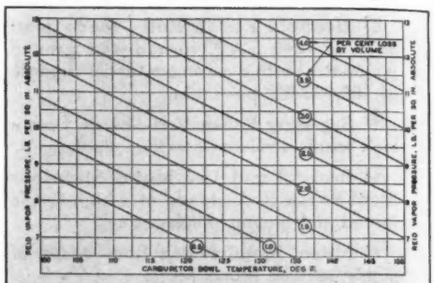
Maximum Permissible Reid Vapor Pressures (Corrected to Sea Level) for Various Atmospheric Temperatures, Special High-Volatility Reference Fuel Plus Butane.

FIG. 7

the tests are apparent from the designation of points. Good agreement between the various methods will be noted.

Fig. 4 and 5 are similar curves for car "D." Car "D" is one of those in the higher-price bracket. Note the fact that in this case the permissible vapor pressures are considerably lower with the volatile test gasoline. Such differences can be laid to peculiarities in the fuel system. These results indicate that vapor-lock test results, independently determined, will be virtually meaningless unless the test fuels used in the separate investigations are the same or nearly so. The more volatile reference fuel offers promise of more nearly accomplishing the desired result of sorting out fuel systems, because wastage of vapors results in lower permissible vapor pressures when fuels of considerable volatility are used in the vapor-lock road tests.

Fig. 6 and 7 show the permissible vapor-pressure curves for all cars tested with the two types of reference fuel. The most significant point in connection with these results is the variation in the slopes of the curves. It is obvious that the prediction of permissible vapor pressures for a range



Vapor Losses from Carburetor Bowl as Related to Reid Vapor Pressure and Carburetor-Bowl Temperature.

FIG. 8

of temperatures from a single observation will be an unsound practice. To facilitate comparisons, all determined permissible vapor pressures for both types of reference fuels are presented in Table 1. Table 1 includes limiting vapor pressures predicted by subtracting 1.2 lb. from the determined permissible vapor pressures for 90-deg.-F. operation. Marked discrepancies between the true and predicted values will be noted.

In considering all of these permissible vapor pressures, it should be kept in mind that the values are probably for a most extreme condition. Also, the vapor pressures are those determined on the car-tank contents after vapor-lock observations. They are in no wise related to or indicative of required vapor pressures of fuels at filling stations. It has been observed that cars in normal driving handle considerably higher vapor pressures than those indicated without encountering operating difficulties.

A few brief remarks regarding the findings on the various modifications in test methods will be of interest. Each of the three alternative methods for arriving at permissible vapor pressures was found to be superior to the present tentative standard method from the standpoint of convenience and speed. As an example, the method embodying the proportioning valve was found to give results in from one-third to one-half the time normally required in the conventional method. The great saving in time required to obtain full and complete information is sufficient incentive to warrant more attention being paid to these various modifications, particularly since results were in such good agreement.

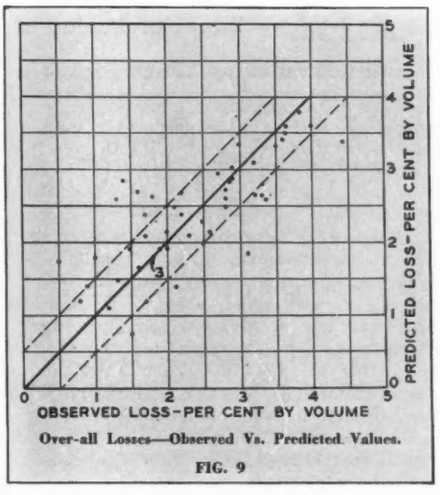
Table 2 is a condensed summary of temperature observations made on the various cars in the course of the tests. Results are given in terms of the increase in temperature above atmospheric temperature. Particularly noteworthy are the unusually-high temperature rises encountered after the 5-min. rest period.

In exploring the range of losses as influenced by temperature, vapor pressure, and type of driving, two cars representative of the lower-price bracket and one in the high-price bracket were selected for exhaustive experiments. Loss determinations were made in each case on the car-tank and carburetor-bowl liquids for a range of atmospheric temperatures when operating on the standard reference fuel of various vapor pressures.

Observations were made both for the condition of steady driving, with the bowl sample drawn while under way, and in a few instances for conditions simulating town driving, in which case the bowl samples were drawn after a rest period of approximately one hour. The standard vapor-lock reference fuel, because of its close resemblance to our present-day average summer gasoline, was found particularly well adapted to loss studies.

In examining the loss data obtained on all cars, it was found that a reasonably good relationship existed between the vapor pressure of the fuel in the car tank, the observed carburetor-bowl temperatures for the various atmospheric temperatures, and the observed loss. This relationship is represented in Fig. 8. Although admittedly not as satisfactory as actual loss measurements, this relationship does enable some predictions as to the probable losses in trip driving where only the fuel vapor pressures and the carburetor-bowl temperatures are known. Predicted losses for all cars tested on which temperature data were available gave the results shown in Table 3. An indication of the reliability of this method of predicting losses can be gained from Fig. 9, where predicted over-all losses are compared with those actually determined. The predictions appear to be reasonably reliable.

For a more complete picture on representative cars for smoothed-out normal-loss observations for two cars in the extreme-price ranges are given in Tables 4 and 5. These are the minimum losses which can be expected in trip driving, with no stops between successive fillings of the fuel tank. Observations under the more extreme conditions of town driving are not given, but indications are that they will be somewhat greater. In other words, over-all losses from the fuel system, when using the gasoline normally sold for the atmospheric temperatures indicated, will range from approximately 4 per cent to some higher value, depending upon the type of driving. These results can be readily converted to terms of octane-number loss by applying the relationship previously described in the test procedure.



Over-all Losses—Observed Vs. Predicted Values.

FIG. 9

TABLE 4—PREDICTED VAPOR LOSSES FOR CONDITIONS OF STEADY DRIVING AT 55 MILES PER HOUR—CAR "A"

(Losses in Terms of Volume Per Cent)

Reid vapor pressure		Atmospheric temperature (°F.) 80	85	90	95	100	105
7 5	Carburetor bowl			0 77	1 07	1 43	1 75
	Rear tank			1 30	1 50	1 75	....
	Over-all			2 07	2 57	3 18	....
8 0	Carburetor bowl		0 70	1 02	1 33	1 67	2 00
	Rear tank		1 18	1 40	1 66	1 89	....
	Over-all		1 88	2 42	2 99	3 56	....
8 5	Carburetor bowl		0 93	1 28	1 57	1 93	
	Rear tank		1 30	1 50	1 80	1 96	
	Over-all		2 23	2 78	3 37	3 89	
9 0	Carburetor bowl	0 88	1 17	1 52	1 83	2 17	
	Rear tank	1 18	1 40	1 66	1 90	2 25	
	Over-all	2 06	2 57	3 18	3 73	4 42	
9 5	Carburetor bowl	1 12	1 43	1 77	2 07		
	Rear tank	1 30	1 50	1 80	2 08		
	Over-all	2 42	2 93	3 57	4 15		
10 0	Carburetor bowl	1 35	1 67	2 02			
	Rear tank	1 40	1 66	1 93			
	Over-all	2 75	3 33	3 95			
10 5	Carburetor bowl	1 60	1 93	2 25			
	Rear tank	1 50	1 82	2 10			
	Over-all	3 10	3 75	4 35			
11 0	Carburetor bowl	1 85	2 17				
	Rear tank	1 66	1 95				
	Over-all	3 51	4 12				
11 5	Carburetor bowl	2 10					
	Rear tank	1 83					
	Over-all	3 93					

Vapor-Lock Region

TABLE 5—PREDICTED VAPOR LOSSES FOR CONDITIONS OF STEADY DRIVING AT 55 MILES PER HOUR—CAR "G"

(Losses in Terms of Volume Per Cent)

Reid vapor pressure		Atmospheric temperature (°F.) 80	85	90	95	100	105
7 0	Carburetor bowl			0 90	1 20	1 45	1 70
	Rear tank			1 25	1 46	1 77	....
	Over-all			2 15	2 66	3 22	....
7 5	Carburetor bowl		0 88	1 15	1 45	1 70	1 98
	Rear tank		1 20	1 38	1 63	1 90	....
	Over-all		2 08	2 53	3 08	3 60	....
8 0	Carburetor bowl	0 88	1 15	1 40	1 70	1 95	
	Rear tank	1 09	1 30	1 50	1 75	2 09	
	Over-all	1 97	2 45	2 90	3 45	4 04	
8 5	Carburetor bowl	1 12	1 40	1 65	1 95		
	Rear tank	1 21	1 40	1 70	1 96		
	Over-all	2 33	2 80	3 35	3 91		
9 0	Carburetor bowl	1 38	1 65	1 90	2 20		
	Rear tank	1 30	1 58	1 85	2 18		
	Over-all	2 68	3 23	3 75	4 38		
9 5	Carburetor bowl	1 62	1 88	2 15			
	Rear tank	1 45	1 75	2 04			
	Over-all	3 07	3 63	4 19			
10 0	Carburetor bowl	1 88	2 12				
	Rear tank	1 60	1 92				
	Over-all	3 48	4 04				
10 5	Carburetor bowl	2 12	2 38				
	Rear tank	1 80	2 13				
	Over-all	3 92	4 51				
11 0	Carburetor bowl	2 38					
	Rear tank	2 00					
	Over-all	4 38					

Vapor-Lock Region

Conclusions

The conclusions reached as a result of this series of road tests can be sub-divided into those dealing with the subject of test procedures and those of a more general nature.

The conclusions regarding test methods might be expressed as follows:

a. Since the object of vapor-lock road tests is to study and classify *fuel systems* and not fuels, it is probable that more consideration should be given to test-fuel characteristics. It would seem that more volatile reference fuels than those commonly employed might serve to indicate losses from fuel systems as well as yield the desired information as to permissible vapor pressure.

b. If sufficient care is taken and a sufficient number of observations are made, any of the road-test procedures will yield results sufficiently accurate and duplicable to be of value. The more tests that are made, the more significant the results will be.

c. Permissible vapor pressures for a range of temperatures cannot safely be predicted from a single observation. Actual observations must be made over the entire range of temperatures.

d. Alternative methods of handling fuels in vapor-lock road tests have promise of greatly simplifying the procedure, and further thought should be given to such ideas. It is not improbable that a simple fuel-system road-test procedure would ultimately be found as important and as useful a test as our present Reid vapor-pressure test for gasoline.

e. The method for determining fuel losses, which is based on the observed differences in the densities of samples taken from the car tank and the carburetor bowl, has promise of meeting requirements for a simple loss test.

Further conclusions of a more general nature are as follows:

1. Losses from fuel systems, even if trouble-free operation is possible, are of sufficient magnitude to warrant attention.

2. Indications are that the over-all losses from representative fuel systems, when using the gasoline normally sold for average maximum atmospheric temperatures, will range from approximately 4 per cent to some higher value, depending upon the type of driving.

3. The corresponding over-all loss in knock rating will be at least one octane number.

Maintenance Costs of Highways

Maintenance costs on bituminous highway surfaces have been reduced by modern methods of construction to the point where they are less than maintenance costs for any other type surface, according to H. H. Houk, chief engineer, Alabama Highway Department.

"Engineers now feel," said Mr. Houk, "that bituminous or asphaltic surfaces can be maintained and improved at far less total annual cost than any other surface yet developed and far more cheaply than the so-called high-type pavements." Mr. Houk made his statement in a paper delivered to highway engineers at the National Montana Bituminous conference.

Fuel-Oil Production and Use

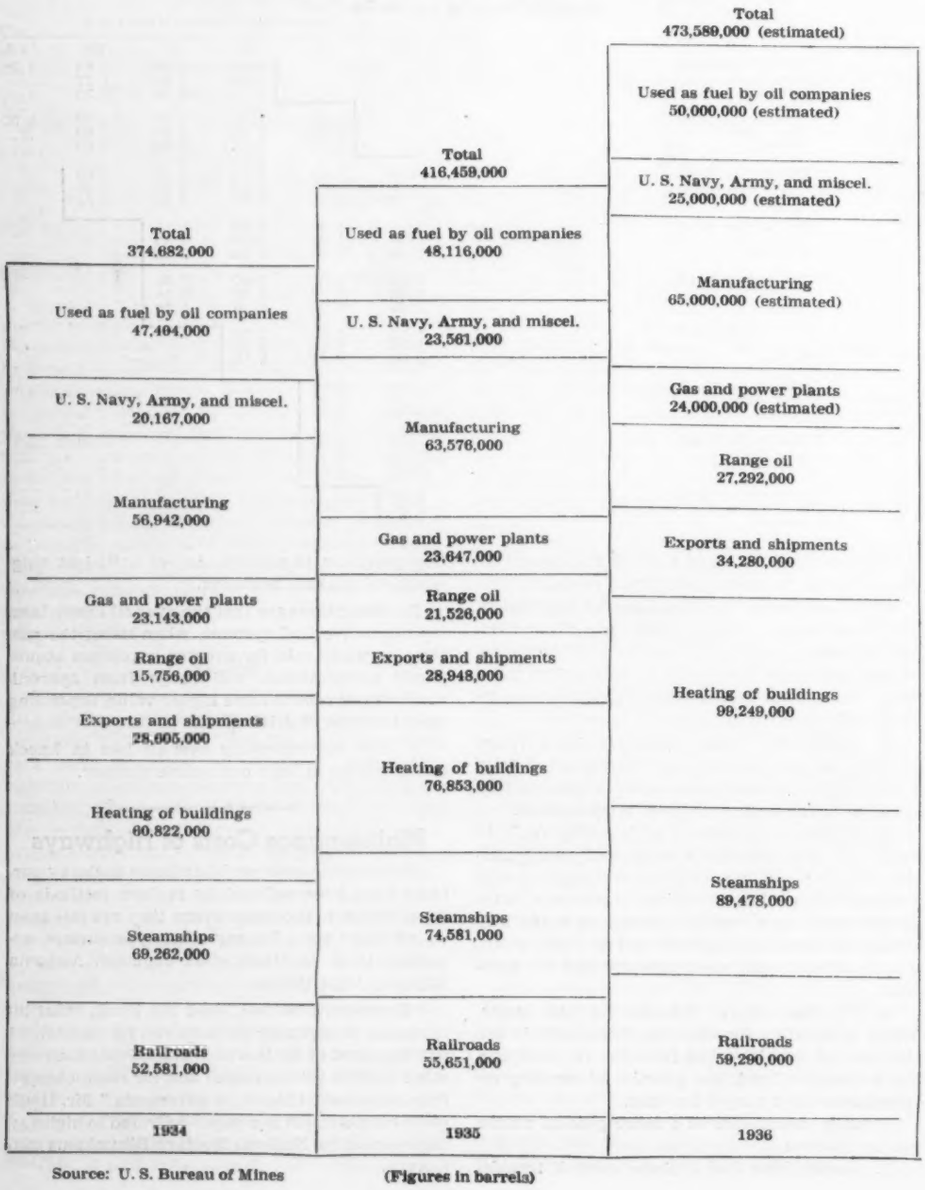
Present Status and Future Outlook for the Supply of Domestic and Industrial Fuel Oils in the United States

R. T. GOODWIN
Shell Union Oil Corp., New York

In order to understand the present position that fuel oil holds in the petroleum industry, a chronological review will show some of the reasons for its increasing importance. From the time petroleum was produced from the Drake well at Oil Creek, Pa., on August 27, 1859, and up to about 1910, kerosene was of prime importance to the refiner; then gasoline took its place. Men were deeply concerned over the probable failure of supplies of lamp oil required to meet the increasing demands, and were searching vigorously for a suitable substitute for spermwhale oil which supplied the prime illuminating oils until the early 60's. The Drake well itself, 69½ feet deep and with an initial production of some 25 bbls. a day, was important only because of the train of consequences which it set in motion. It was soon learned that petroleum was a raw material which was used to manufacture lamp and lubricating oils, and the industry continued on that basis until just after the beginning of the present century. After the turn of the century, large production of petroleum rising out of developments in Texas, Oklahoma, Kansas, and California, and the discovery of oil in Mexico resulted in heavy fuels forcing their way into the fuel markets in competition with coal. With the introduction of the internal-combustion engine in 1910, the industry entered a new cycle of production and consumption. The initial demand for both gasoline and fuel oil occurred about the same time.

It is reported that oil burners were first used in the Russian oil fields, and later were installed on Russian steamships. When these ships docked at San Francisco, the fuel-oil-burning idea was approved and adopted by American manufacturers about 1900. The first reported installations were made on ships and in bakeries on the Pacific Coast. Fuel-oil burners were rapidly replacing coal burners for ships, so that by the close of the World War virtually all of the navies were burning oil. The merchant marine followed the navy example, and the oil-fuel tonnage of the world rose from 18 per cent in 1920 to 40 per cent in 1930, and to 50 per cent in 1936. Today, about 40 per cent of the oil-fuel tonnage consists of diesel-powered ships.

Fig. 1—Gas-oil and fuel-oil deliveries by uses, 1934-1936



Source: U. S. Bureau of Mines (Figures in barrels)

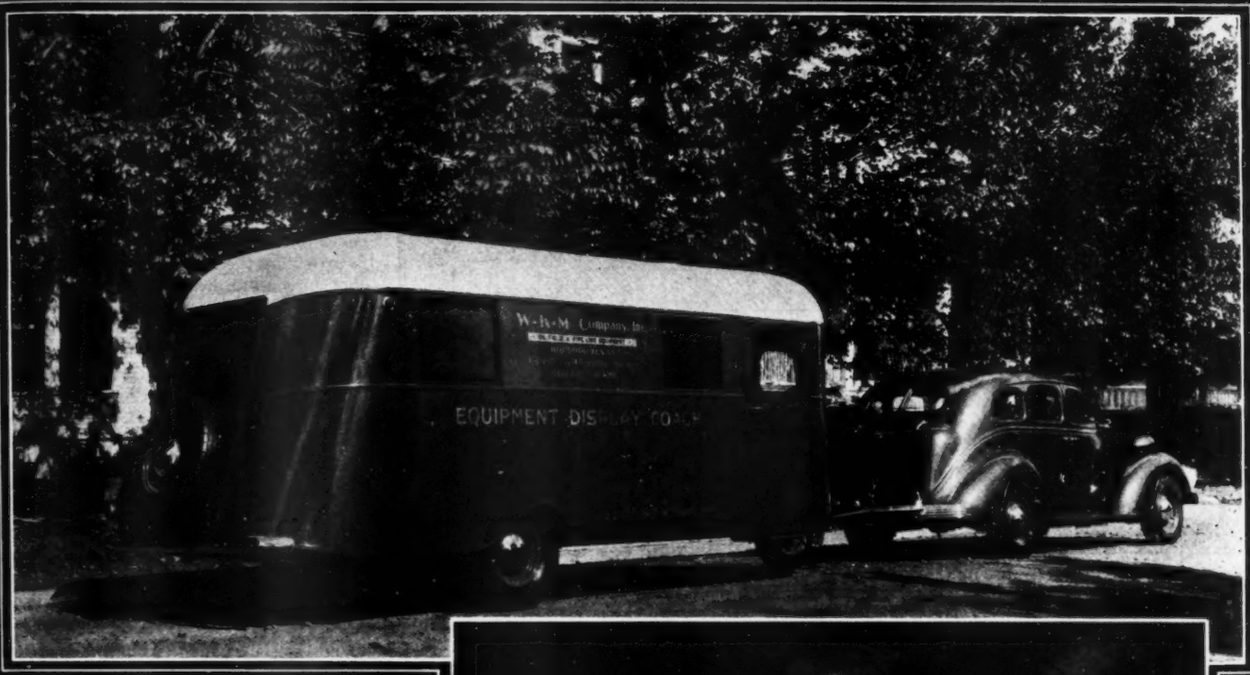
A.P.I. **— Paper presented at annual meeting, Chicago, 1937.**

The oil-fuel tonnage of the world rose from 18 per cent in 1920 to 40 per cent in 1930, and to 50 per cent in 1936. Today, about 40 per cent of the oil-fuel tonnage consists of diesel-powered ships.

This change from coal to fuel oils for marine use is still taking place, as is evident in a recent report for the fiscal year 1937 from the Statistical Bureau of the Panama Canal, which shows that there were only 977, or 18 per cent of coal-burning ships among the 5,387 ships transitting the canal during the year. They further report that the number of motor ships (diesels) is increasing, with a total of 2,115 in 1937—although oil burners with 2,236 ships are still in the majority. Motor ships represented 39.26 per cent of the canal traffic in 1937, the only class to show an increase over 1936. From these data, we learn that 82 per cent of the transcanal ships are now using fuel oil.

Rapid Change to Fuel Oil

The use of fuel oil has spread to various industries since 1920, especially those with operations requiring flexibility of heating, accurate temperature control, limited storage facilities, ease in handling, and freedom from ash, viz., such as manufacturing, railroads, office buildings, etc. The change in distribution of fuel-oil consumption since 1934 is shown in Fig. 1, "Gas-Oil and Fuel-Oil Deliveries by Uses, 1984-1936." In 1935, for the first time, the fuel consumed for heating buildings was 21 per cent of the total and exceeded the amount used by steamships, which was 20.4 per cent. This consumption for heating buildings continued to increase in 1936, so that it constitutes by far the greatest use in any single industry; it totaled 99,-



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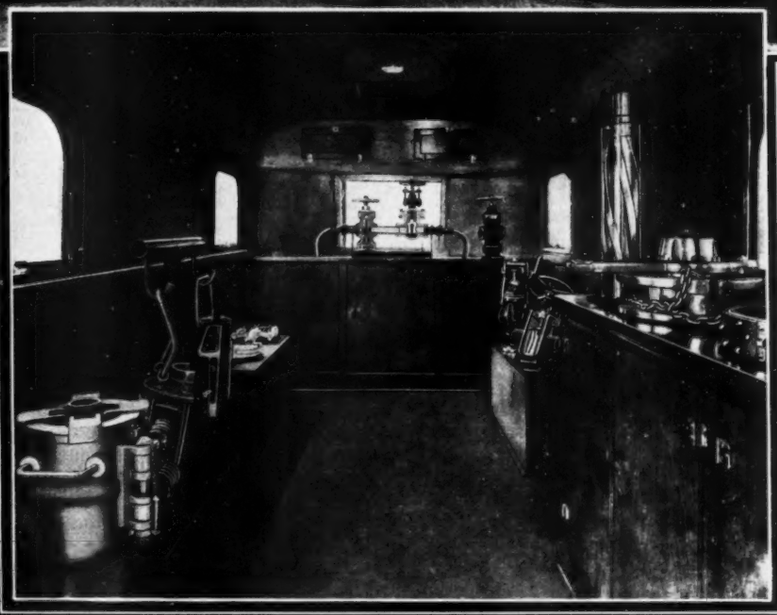

Top: This "traveling oil show" was tailor-made to exhibit W-K-M Products, and rolls along as easily as a regular trailer.

Bottom View: Showing W-K-M Products, either working size or models, according to the size. Interesting and instructive moving pictures are shown regularly in this coach.

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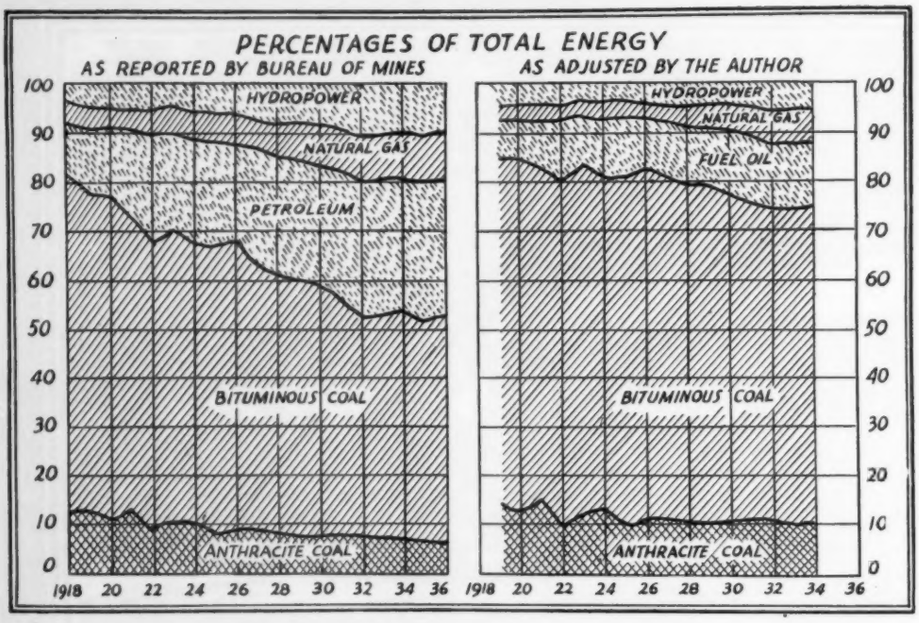

NET CHANGES IN PERCENTAGES OF TOTAL ENERGY

	Total production (U. S. Bureau of Mines)			Competitive consumption (By author)[1]		
	1919	1934	decrease	1919	1934	decrease
Anthracite	12 7	7 6	39	14	10 6	24
Bituminous	64 7	46 1	29	71	64 5	11
Total coal	77 4	53.7	31	85	75 1	12
Oil	13 7	27.7	increase 102	8	13 5	increase 69
Natural gas	4 2	9 3	121	3	6 6	120
Total oil and gas	17 9	37 0	106	11	20 1	83
Hydropower	4 7	9 3	100	4	4 8	20
Total substitutes	22 6	46 3	105	15	24 9	66
Grand total	100 0	100 0	...	100	100 0	..

Fig. 2

249,000 bbls., compared to 76,853,000 bbls. in 1935, or a gain of 29 per cent. Range-fuel sales, not included in the heating-fuel total, showed increased volume in 1936, when deliveries reported to the U. S. Bureau of Mines totaled 27,292,000 bbls., or a 27 per cent gain over the 1935 demand. The combined sale of heating and range oils, because range fuels are now used largely for heating, increased from about 25,000,000 bbls. in 1926 to 126,541,000 bbls. in 1936. It should be noted that the consumption has not materially increased in industries using heavy fuel oil on an approximate coal-oil parity basis. The demand will continue to increase in industries where liquid fuels have definite operating advantages over coal.

Total Energy Used—Coal, Petroleum, Gas, Water

Figure 2 shows the percentages of total energy utilized in this country from 1918. The energy survey of the U. S. Bureau of Mines[1a] shows that coal's contribution to the country's energy sources declined from 77 per cent in 1919 to 54 per cent in 1934 and, conversely, the substitute energies increased from 23 per cent in 1919 to 46 per cent in 1934. While these figures show rather a startling change away from coal, the over-all change from coal is reduced considerably when we compare the fuels where their uses are actually interchangeable. The U. S. Bureau of Mines total energy from petroleum includes lubricants, wax, road oil, and gasoline; and certainly coal could not replace petroleum products in these particular uses.

A. T. Shurick[1] has pointed out that almost invariably the true purport of the data has been misinterpreted, and has created a wrong conception of our energy supplies. Concerning this misconception, he has made the following statement: "It is important to note that the figures for 'domestic oil' and 'natural gas,' as in earlier issues of these tables, represent the entire production of crude petroleum and gas. Most of this production does not come in direct competition with coal. Much of the supply of both oil and gas is used in regions of the country, such as California and parts of the Southwest, where coal is available only at unusually high cost because of heavy transport charges. Nearly half the natural gas is used in the field for drilling or operating oil and gas wells and pipe lines, or for the manufacture of carbon black. More than half the oil is used in the form of gasoline, kerosene, and lubricants, for which purpose coal cannot well compete except at much higher levels of price. Even these refined products involve a certain measure of indirect competition with coal; for the energy market of the country is becoming more fluid and competitive, and a demand that cannot be met by one source of supply tends to fall back on the others. The purpose of these tables (Figure 2) is to measure the total demand for energy."

Deducting this non-competitive consumption from the total oil production in the U. S. Bureau of Mines tabulation, this leaves but 38 per cent directly competitive with coal in the form of fuel oil.

He further points out that the use of natural gas in the producing fields for power and carbon black, and for other industrial uses, reduces the amount of this commodity in actual competition with coal by more than 47 per cent. Mr. Shurick further states that "considered from the strictly competitive standpoint, as previously outlined, the bureau's figure of 53.7 per cent as coal's share in the potential energy production of the country becomes 75.1 per cent when the actual energies used in providing the heat and driving power alone are considered, and the proportion contributed by the substitute energies must, conversely, be reduced from 46.3 per cent to 24.9 per cent. These figures show that coal still furnishes about 75 per cent of the power; and on this basis fuel oils are far from having saturated the market.

TABLE 1—REQUIRED INSTALLATION FOR HOUSEHOLD HEATING

Storm windows	½-in. insulation	Weather stripping	Approximate savings (per cent)
^			25-30
..	×		20-30
..	..	×	15-20
×	..	×	27-32
..	×	×	40
×	×	..	50
×	×	×	52

The "×" marks indicate various methods of reducing heating costs additionally by installation of storm windows, insulation, and weather stripping.

These figures are based on a house not equipped with any of these devices.

Coal Vs. Fuel Oil

The coal industry, and especially anthracite producers, are making a strong bid for household heating through the introduction of residential stokers. In order to protect this household-heating trade against fuel-oil and gas competition, the coal producers are cooperating with the "appliance manufacturers" in the development and sale of automatic stokers for domestic use. The sale of domestic stokers has increased from 7,000 in 1932 to 76,000 in 1936. The installation cost for the domestic oil burner and the domestic stoker is practically the same today, so that the price of coal for this service must be kept comparatively low in order to compete with domestic fuel oil.

Gas Competition

History records that gas was first used in 1821 in Fredonia, N. Y., when piped from a well to a nearby building. Since that time it has become a fuel of major importance, and is distributed almost nationally through thousands of miles of pipe lines. In the producing fields, gas is used for generating power. Some is changed to carbon black for use as filler in automobile tires, and lately has become an important raw product for the production of a number of new chemicals. It is estimated that about 55 per cent of the natural gas produced and consumed in the United States comes to the surface of the ground in association with oil.

The natural gas industry is one of the fastest-growing natural-resource industries. A reference to Figure 2 shows that the use has practically doubled in the past 10 years. Prior to 1925 much of the gas was either wasted at the wells or sold at a very low rate for the production of carbon black. During the past 10 years a number of pipe lines has been built from the Louisiana and Texas fields to markets such as Chicago, Denver, and Detroit. The cost of these pipe-line facilities definitely limits the areas in which natural gas can compete with fuel oils, especially for domestic service. It is estimated that it costs about 2 cents per 100 miles, per thousand cubic feet, to transport natural gas to any particular "city gate." In addition to transportation cost, there must be added the cost of raw material at the well, plus the fixed charges of physical properties in the city necessary for distribution. In addition to these high costs of physical properties, another limiting factor in extending the number of gas customers and total consumption is based on the "peak" load of the gas distributing system, even though this peak is reached only for a matter of minutes in any season. This limiting factor of the peak load is not effective in fuel-oil distribution. It is expected that the distribution of natural gas to domestic and commercial consumers will continue to expand and replace manufactured gas, because today it represents only about 56 per cent of the volume of gas distributed for these uses.

[1a]Figures refer to bibliography.

The gas companies throughout the country are utilizing extensive advertising campaigns to obtain additional consumption of both commercial and domestic gas. While advertising has probably resulted in the loss of some fuel-oil accounts, it has definitely aided in selling automatic heat. During the past few years some gas companies have guaranteed heating costs over a season, and in many cases have found that their estimates were somewhat low. They have profited by this experience, and now make a complete engineering survey of the house, and they now require insulation, weather stripping, and other features before they will definitely guarantee the season heating cost. The oil industry can well follow the lead of the gas companies in advising the customer on building changes which would result in lower fuel-oil consumption. Table 1 shows how it is possible to make fuel oil even more economical by the adoption of storm windows, insulation, and weather stripping. By the adoption of a combination of these insulation features, it is possible to save up to 52 per cent on fuel-oil consumption. The effects of these various insulating materials should certainly be brought to the attention of fuel-oil customers and prospects.

The prospective fuel-oil consumer is usually interested in the comparative consumption of fuel oil, coal, and gas. Table 2 is a comparative estimate of the yearly fuel requirements and equivalents, and is calculated for average heat contents and average heating efficiencies. By using the local fuel prices, the prospect or customer can easily calculate his seasonal requirement and approximate cost by means of this table.

TABLE 2—YEARLY FUEL REQUIREMENTS AND EQUIVALENTS*

Tons of coal or coke	Tons of stoker coal	Gallons of No. 3 oil	Therms of gas	Thousands of cubic feet of manufactured gas	Thousands of cubic feet of natural gas	Thousands of cubic feet of mixed gas
5	4 2	685	924	168	92	115
6	5 0	822	1,108	202	111	138
7	5 8	959	1,293	235	129	162
8	6 7	1,096	1,478	269	148	185
9	7 5	1,233	1,663	302	166	208
10	8 3	1,370	1,847	336	185	231
11	9 2	1,507	2,032	370	203	254
12	10 0	1,644	2,216	403	222	277
13	10 8	1,781	2,401	437	240	300
14	11 7	1,918	2,586	470	259	323
15	12 5	2,055	2,771	504	277	346
16	13 3	2,192	2,955	538	296	369
17	14 2	2,329	3,140	571	314	392
18	15 0	2,466	3,325	605	333	415
19	15 8	2,603	3,509	638	351	439
20	16 7	2,740	3,694	672	369	462
21	17 5	2,877	3,879	706	388	485
22	18 3	3,014	4,063	738	406	508
23	19 2	3,151	4,248	773	425	531
24	20 0	3,288	4,433	806	443	554
25	20 8	3,425	4,618	840	462	577
30	25 0	4,110	5,542	1,007	554	693
35	29 1	4,795	6,465	1,175	647	808
45	37 5	6,165	7,389	1,345	739	924
50	41 6	6,850	8,312	1,511	831	1,040
40	33 3	5,480	9,236	1,679	924	1,155

*The Oil-Burner Owners Savings Book, published by Shell Union Oil Corp. (1937).

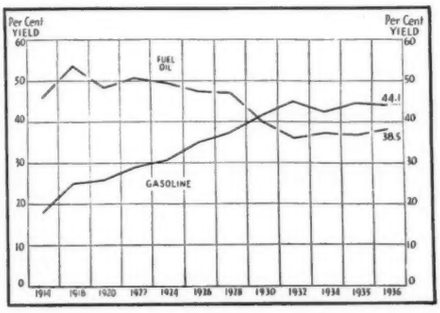

Fig. 3—Per cent yields of gasoline and fuel oils from crude oil

Table 3 shows an estimated comparison of fuel costs in the New York City area with the estimated costs of the various competitive fuels, based on an annual consumption of 10 tons of hand-fired nut coal. It must be realized that these figures cannot be taken as actual, and are only intended to show approximate comparative costs.

The Refiner's Changing Horizon

In considering ways and means for meeting the fuel-oil demand in the future, it is advisable to divide the subject into two distinct parts: 1, the demand for distillate fuels and, 2, the demand for heavy fuel oils or bunker "C" type fuels. It is recognized that considerable quantities of heavy fuel oils are consumed annually in under-boiler service for steam generation, and were originally in competition against coal on the coal-oil parity basis. In some of these cases, fuel oil does not possess any real advantages, and cannot be priced to include any increased return for the desirable properties of a liquid fuel. This coal-oil-parity market is becoming less and less attractive to the fuel-oil producer, for in many cases heavy fuel-oil production will be incidental "to the balancing of the gasoline and distillate fuel-oil demands." This marginal demand for heavy fuel will probably not increase to any great extent unless the prices of coal are materially increased.

The balance of this paper will be devoted primarily to a discussion of distillate fuels.

The refiners and distributors of petroleum products have been forced by nature or circumstances of their own inventiveness to change their major production product. There was a time when refiners boasted that they were producing almost one-half a barrel of kerosene from each barrel of crude refined. The remarkable changes in yields of various products is apparent in Table 4, which shows the principal products from crude oil from 1914 to 1936. During this 20-year period the average yield of gasoline has been increased from 18.2 to 44.1 per cent, while the yield of kerosene has decreased from 24.1 to 6 per cent. During this same period there has been both an increase and decrease in the yield of gas oil and fuel oil, showing a decrease from 46.5 per cent in 1914 to 38.5 per cent in 1936—although for individual years there were considerable fluctuations.

Source of Fuel Oils

The crudes of different producing oil fields contain a very wide variation in the percentages of the petroleum products into which they can be separated. The modern refiner may run many different grades of crude oil—not merely because these several grades are particularly economically available to that refinery, but because certain of the grades contribute a desirable yield of products or a required specification of product. A refinery on the Eastern Seaboard may operate on crudes from several foreign countries as well as on crudes from Texas, Gulf states, and Pennsylvania. One grade of crude may contain a major percentage of gasoline which may be either good in anti-knock grade (high octane) or bad in anti-knock (low octane), a high percentage of diesel fuel of high or low-cetane number, or a high percentage of kerosene which may be either good or poor in burning quality. The next yield may be lubricating oil, or instead of a lubricating oil, the final product may be fuel oil or asphalt. The percentage of gas oil obtainable from crude may vary from a trace in heavy Mexican crude up to 52 per cent in a Mirando crude. A Mid-Continent crude would yield about 30 per cent; a Smackover, 40 per cent; a California (25° A.P.I.), 15 per cent; and a Colombia, South America (31° A.P.I.), 27 per cent.

At the present time there are several other changes taking place in the composite refinery picture, because the domestic oil burner has created an additional demand for distillate fuel oils. This increased demand for distillate fuels does not show in Table 4, because both heavy and light fuels are grouped together; but this factor is brought out in a recent statement from the U. S. Bureau of Mines:* "The consensus of opinion indicated that the marketing grades 1 to 4, usually designated the heating oils, coming within the gas-oil-distillate-fuel-oil range and that grades 5 and 6 covered the heavy or residual fuel oils. Consequently, the oil companies were requested to report their heating-oil sales under these two general headings. A tabulation of the incoming statements show that light or distillate fuel oils designated by grades 1 to 4 for the purpose of this survey totaled 69,429,000 bbls., or 69.9 per cent of the 1936 heating-oil sales, and that grades 5 and 6 were used for heating to the extent of 29,820,000 bbls., or 30.1 per cent of the total demand. This recently-developed demand has forced the refiners to classify distillate fuel oils in the principal-product classification, to share this distinction with gasoline; and places a direct and definite responsibility on the American petroleum industry to meet these growing requirements in the same satisfactory manner in which they have met the increasing motor-fuel demand."

Comparing the yield of fuel oil as given in Table 5 for the year 1934 with yield for the year 1936, the total yearly increase has been from an average of 37.4 per cent in 1934 to 38.5 per cent two years later. This increase shows the existence of some flexibility in yield of gasoline and fuel oils—although it is not economically possible at this time to produce 100 per cent of gasoline from crude and the same is true of fuel oil. The total fuel-oil yield, including kerosene for 1936, was 43.76 per cent compared with a yield of 44.13 per cent for motor fuel or gasoline.

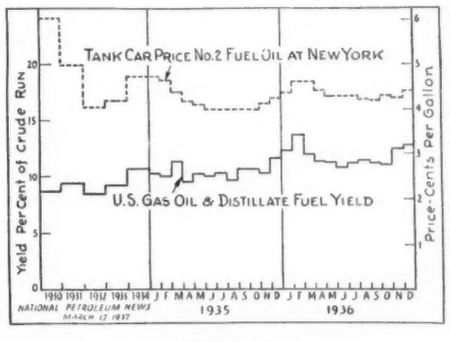
TANK CAR PRICE No.2 FUEL OIL AT NEW YORK
U.S. GAS OIL & DISTILLATE FUEL YIELD
Yield Per Cent of Crude Run
Price-Cents Per Gallon
1935
1936
NATIONAL PETROLEUM NEWS
MARCH 17 1937

Figure 4

Fig. 3 shows proportion of crude oil converted into gasoline and fuel oil, 1918 to 1936. This shows that the gasoline yield equaled and crossed the fuel-oil yield early in 1931. It further shows that

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the fuel-oil yields are increasing, so they may equal gasoline at an early date.

In order to maintain a satisfactory, fuel-oil-gasoline supply-demand relationship, it will be necessary: 1, that the winter demand for gasoline continue to increase; 2, that, in the process of meeting the seasonal demand for fuel oil, excess of gasoline is not produced.

In order to make a material increase in the yield of distillate fuels, it will be necessary to sacrifice gasoline production and to crack heavy fuel oils to produce additional yields of distillate fuel oils and a residual product of solid coke. This method sacrifices yield of heavy fuels for the production of additional volumes of distillate fuels. The necessity for the adjustment of refinery methods was brought out during the cold weather in 1935-36 season, at which time the refiners not only found it necessary to increase their yield of distillate fuels per barrel of crude run to stills; but, to meet this emergency, it was necessary to run more crude to stills than was actually needed to produce the required gasoline, and this resulted in a surplus of gasoline in the Mid-Continent at an unseasonable time. The yield of distillate fuels in the United States refineries varied from 8.47 per cent in 1932, when prices were on a decline, to a peak of 13.65 per cent in February, 1936, (Fig. 4).[3] The East Coast refiners changed their runs to get an even greater yield, and in February, 1936, produced 14.24 per cent of distillate fuel from each barrel of crude run to stills. Yield, then, is definitely affected by seasonal demand as well as by price. In order to bring out this comparison, Fig. 4 also shows the tankcar price of No. 2 fuel at New York in cents per gallon.

If in refinery operations it is necessary to sacrifice gasoline yield to increase distillate-fuel yield, then the increased demand for distillate fuels can be met: first, by increasing the total crude oil charged to stills to take care of motor-fuel demands and, second, by getting a refinery price for the distillate which will make it economical to produce larger volumes of such a product. The price of distillate fuel at the refinery approaches the price of gasoline, and has been in that position for some years, as indicated by the following prices: "The average tankcar price for No. 2 fuel oil, New York harbor, January 30, 1930, to December 31, 1936, was 4.64 cents per gallon; while the average tank-car price of gasoline was 6.27 cents per gallon during the same period. The differential between the two products for seven years has thus been only 1.63 cents per gallon."[4] It is of further interest to note that the average retail price of No. 2 fuel in New York for the past seven years has been 6.85 cents per gallon, and the average price during this last heating season was down 24 per cent from 1926.

Now that distillate fuels have attained a major product classification in refinery operation, it is necessary for them to share a part of the cost of the raw material and contribute a greater portion of the total income of the industry. Considered in another way, a barrel of crude will allow only a certain total number of gallons of finished product, and the increase in yield of gasoline or of distillate fuels is at the expense of the other; so that the refiner's problem today is to produce more distillate fuel and comparatively less gasoline. Some of the recent developments in the science of refining that assist with this problem are reforming, polymerization, viscosity-breaking, and non-residuum cracking. In the non-residuum cracking the final product is a solid coke, rather than a liquid fuel (bunker or No. 6), and this operation yields a greater percentage of distillate products.

The past three-years' trend indicates that by 1940 the demand for distillate fuels for domestic use will approximate 140,000,000 bbls. The 1936 sales of 96,000,000 bbls. are estimated to increase as follows: 1937, 105,000,000 bbls.; 1938, 117,000,000 bbls.; 1939, 128,000,000 bbls.; 1940, 140,000,000 bbls. It is also expected that the gasoline consumption will increase about 20 per cent during the same period.

TABLE 4—PRINCIPAL PRODUCTS FROM CRUDE OIL[2]

Year—	Gasoline and naphtha (per cent)	Kerosene (per cent)	Gas oil and fuel oil (per cent)	Lubricants (per cent)
1914	18 2	24 1	46 5	6 6
1918	25 3	13 3	53 5	6 2
1920	26 1	12 7	48 6	5 7
1922	28 8	11 0	50 9	4 7
1924	31 2	9 3	49 8	4 3
1926	34 9	7 9	46 9	4 1
1928	37 4	6 6	46 7	3 8
1930	42 0	5 3	40 2	3 7
1932	44 7	5 3	35 9	2 7
1934	43 4	6 0	37 5	2 9
1935	*44 3	5 7	37 2	2 9
1936	*44 1	5 2	38 5	2 9

*Gasoline only.

The U. S. Bureau of Mines reports for the past two years show the demand of the various products and percentage change for the United States from all crudes, as set out in Table 6. It will be noted in Table 6 that the 1936 demand for gas oil, fuel oil, and kerosene totaled 460,470,000 bbls., or approximately the same as motor fuel which was 481,591,000 bbls.

The demand for home-heating oils, distillate fuels, and gas oils from 1934 through 1936 increased an average of 17 per cent per year.

The consumption of fuel oil for heating was 99,249,000 bbls. (U. S. Bureau of Mines report). The total gas-oil, range-fuel, and distillate-fuel demand for 1936 was 126,541,000 bbls.; during the same period the gasoline demand was 481,591,000 bbls., or a ratio of approximately 1 bbl. of domestic fuel oil to 4 bbls. of motor fuel. This trend of increase in both commodities will probably change during the next few years. The demand for motor fuel will level out, and the demand for distillate fuels will increase. This increase, of course, will depend on the sale of new oil burners. The annual demand for domestic fuel oil and kerosene (range fuel) is 126,000,000 bbl.—which leads us to believe that the industry has progressed into another definite stage of its development. Just as refiners have been forced to adjust their kerosene yields to obtain more gasoline, so in the future it will be necessary for the refiners to adjust their gasoline and heavy-oil yields to produce more distillate fuels.

In order to meet this increasing demand for the various petroleum products, which averaged 11 per cent last year, it has been necessary continually to increase the allowable crude production in the various producing states along with corresponding increase in volume of crude run to the refining stills. The crude-oil production has increased almost continuously from some 2,000,000 bbls. daily in 1931 to the all-time high record of 3,745,500 bbls. daily in the week of August 28 of this year. The run of crude oil to stills has increased along with crude production, so that the daily throughput is about 3,500,000 bbls.

Producing Distillate Fuels

The modern method of refining crudes involves two major processes: *a*, crude oil is distilled or topped, yielding gasoline, kerosene, and other products such as gas oil, and fuel-oil residue and; *b*, the residue or gas oil from (*a*) may subsequently be cracked to produce gasoline, cycle stock (cracked gas oil), and a cracked fuel-oil residuum. The gas oil and straight-run fuel-oil residue from (*a*) may be cracked by one of the following methods:

1. Cracked to liquid residuum.
2. Non-residuum operation, i.e., cracked to solid residue of coke.

The method of operating the cracking may again be divided into several classifications, depending on liquid-phase or vapor-phase operation, high-pressure or low-pressure operation, limited cracking to break viscosity, etc.

By using method (1) there is produced about 41 per cent gasoline, 12 per cent cycle stock or gas oil, and 36 per cent residuum fuel oil. By utilizing method (2) on non-residuum, the gasoline is increased to 49 per cent, cycle stock or gas oil to 14 per cent, and the fuel oil is reduced to 7 per cent with a yield of about 70 pounds of coke per barrel input charged to unit. The method selected for operation depends on several factors, viz., gasoline prices, coke prices, fuel-oil prices, type of cracking unit used, etc. The non-residuum operation produces a greater yield of gasoline, an additional yield of gas oil suitable for fuel-oil distillate, much less heavy fuel, and a greater yield of gas which can now be utilized by the polymerization process to produce a high-octane gasoline.

Coke now finds a ready market by being mixed with coal in about equal proportions and sold for domestic fuel. In most cases it is not economical to use reduced or uncracked crude for heavy fuels. It should be cracked to produce gasoline and fuel-oil distillates, which distillates can be treated to produce domestic grades of fuel.

Petroleum coke now finds a ready market as such, or, after having been mixed with coal in about equal proportions, it is sold for domestic fuel. In most cases it is not economical to use reduced or uncracked crude for heavy fuels. It should be cracked to produce gasoline and fuel-oil

TABLE 3—ESTIMATED COMPARISON OF FUEL COSTS—NEW YORK CITY AREA

Legend	Nut coal, hand-fired	Nut coal, stoker-fired	No. 1 Buck, blower—hand-fired	No. 1 Buck stoker-fired	Rice, stoker-fired	Soft Coal, stoker-fired	Coke, hand-fired	Oil conversion job	Oil-burner unit	Gas conversion job	Gas boiler unit
Cost per unit	$10.50[a] per ton	$10.50[a] per ton	$7.35[a] per ton	$7.35[a] per ton	$6.50[a] per ton	$7.10[a] per ton	$11.25[a] per ton	$.075[b] per gal.	$.075[b] per gal.	$.55[c] per M. C. F.*	$.55[c] per M. C. F.*
Heat value of fuel as fired (potential B.t.u.)	12,500 per lb.	12,500 per lb.	12,000 per lb.	12,000 per lb.	11,500 per. lb.	14,000 per lb.	13,000 per lb.	138,000 per gal.	138,000 per. gal	550 per cu. ft.	550 per cu. ft.
Average efficiency	50%	65%	50%	60%	60%	60%	50%	60%	70%	60%	75%
Effective heat value (B.t.u.)	6,250	8,125	6,000	7,200	6,900	8,400	6,500	82,800	96,600	330	413
Useful heat obtained for 1 cent	11,905	15,476	16,327	19,592	21,231	23,662	11,556	11,040	12,880	6,000	7,509
Comparative cost per unit of heat per million B.t.u.	100% $.840	77% $.646	73% $.612	61% $.510	56% $.471	50% $.423	103% $.865	108% $.906	92% $.776	198% $1.66	158% $1.33
Cost of fuel per season based on 10-ton hand-fired furnace	$105.00	$80.85	$76.65	$64.05	$58.80	$52.50	$108.15	$113.40	$96.60	$207.90	$165.90
Annual consumption	10 tons	7.7 tons	10.4 tons	8.7 tons	9 tons	7.4 tons	9.6 tons	1,500 gal.	1,300 gal.	378,000 cu. ft.	302,000 cu. ft.

*Thousand cubic feet. [a]Burns Bros., 9-30-37. [b]Shell Union Oil Corp., 9-30-37. [c]Consolidated Edison Co. of New York (average) 10-1-37.

distillates, which distillates can be treated to produce domestic grades of fuels.

Distillate Fuel-Oil Demand

A comparison between the demand for motor fuel and fuel oils forcibly demonstrates that fuel oil must be considered not as a by-product, but as a co-product with motor fuel. Since 1930 the number of motor vehicles in the United States has increased 7 per cent, and the domestic demand for motor fuel has increased 22 per cent. In this same period the number of domestic oil burners installed in the United States increased 103 per cent, and the consumption of fuel oils has increased 113 per cent. *A comparison of consumption figures shows that the domestic heating-oil demand has increased eight times as fast as the gasoline demand.*

Each domestic oil burner is of far greater importance to the oil industry in the matter of total petroleum products consumed than in each motor car. A motor car consumes an average of 700 gallons of gasoline, while the average oil burner consumes 48 bbls., or approximately 2,000 gallons of fuel oil. On this basis, each domestic oil burner uses about three times as many gallons of petroleum as each motor vehicle each year.

This increase in gasoline demand and the very rapid increase in distillate fuel-oil demand have forced the refiner to change his traditional plan of operation. Crude oil runs to stills are now maintained at a fairly stable rate throughout the winter in order to keep the nation's homes supplied with domestic fuel oil. Even though the refiner runs his crude to obtain a higher yield of fuel oil and gas oil than usual, and reduces the gasoline yield, fuel-oil demand has resulted in adding more gasoline to storage during January, February, and March than in the past. This makes it important that the refiner recognize changing demands so that gasoline production and consumption will remain in balance throughout the year. Such changes in consumption of petroleum crudes require a number of adjustments in refiners' processes. These adjustments are technically possible; but, in the last analysis, are controlled by the price ratio between the different products produced. A reference to Fig. 5 shows a somewhat different average yield from year to year; it likewise shows the seasonal production of distillate fuel oils in both the Gulf and East Coast refineries, also an average for the country. The definite peak on increased yields during the winter months for distillate fuels demonstrates that the refiners are able to change their operations to produce the product most in demand.

Diesel-Fuel Demand

The high-speed diesel engine is a large consumer of distillate fuels; for from 1932 to 1936 the annual sale of diesel horsepower has increased from 130,000 to 1,830,000. It is further estimated that about 90 per cent of the diesel engines sold in 1936 were less than 100 hp. This change to diesel engines of lower horsepower has affected domestic fuel in two ways:

1. Diesel engines of lower horsepower and higher speeds require a fuel of lower viscosity and lower boiling point similar to that required for domestic oil burners. These smaller diesel engines will probably operate 3,000 hours per year, and would have an annual consumption of perhaps 4½ bbls. per horsepower-hour per year. On this basis, a 60 hp. diesel engine would consume 270 bbls. of fuel per year, or approximately five times the average consumption of a domestic oil burner.

The new installations of low horsepower diesel engines in 1936 required an additional volume of approximately 7,500,000 bbls. of distillate fuel.

2. In many cases the smaller engines are not equipped with sufficient storage capacities to take barge or tankcar deliveries, so they are supplied mainly through tank-wagon deliveries. This newly-created consumption tends to place an additional delivery load on the fuel-oil distributor, but at the same time will tend to equalize his deliveries because the consumption will usually cover a full 12 months' period.

TABLE 5—AVERAGE YIELDS—MOTOR FUEL AND FUEL OILS*

Year:	1936 (%)	1935 (%)	1934 (%)
Kerosene	5 25	5 78	6 01
Distillate fuel oil plus gas oil	11 76	10 38	10 60
Residual fuel oil	26 75	26 90	26 84
Total yield, fuel	38 51	37 28	37 44
Total yield, fuel and kerosene	43 76	43 06	43 45
Motor fuel	44 13	44 30	43 09

*U. S. Bureau of Mines.

TABLE 6—DOMESTIC DEMAND FOR PETROLEUM PRODUCTS IN 1936 AS COMPARED WITH 1935

(From U. S. Bureau of Mines Report)
(Figures in barrels)

Product—	1936	1935	Per cent change
Motor fuel	481,591,000	434,810,000	+11
Kerosene	51,479,000	47,645,000	+8
Gas oil and fuel oil	408,991,000	366,723,000	+12
Lubricants	22,676,000	19,661,000	+15
Wax	1,076,000	933,000	+15
Coke	6,267,000	6,703,000	—6
Asphalt	22,185,000	15,652,000	+41
Road oil	7,689,000	5,962,000	+28
Still gas	54,441,000	51,184,000	+6
Miscellaneous	2,223,000	1,973,000	+12
Losses	34,545,000	32,440,000	+6
Total domestic demand	1,093,163,000	983,686,000	+11
Daily average	2,987,000	2,695,000	+11

TABLE 7—GEOGRAPHIC DISTRIBUTION OF OIL-BURNER SALES

	1929 (%)	1936 (%)
Pacific Coast	9 2	4 1
Middle West	27 4	14 2
Middle and South Atlantic	19 3	30 0
Metropolitan New York	26 4	31 5
New England	17 7	20 2

Location of Oil-Burner Market

The burner markets are changing their geographic location, especially since 1929. Table 7 demonstrates the extent of this change.

Table 7 shows that 18.3 per cent of the sales have moved from the Pacific and Middle West to the Atlantic Seaboard. Today, the prime domestic-burner market includes New England, Middle Atlantic states (except western Pennsylvania), the Middle West (except Ohio), and Washington and Oregon. These sections represent from 82 to 85 per cent of yearly domestic burner sales. Permits for burner installations issued for this year indicate that the trend of increased sales is still along the Atlantic Seaboard. If this same trend holds over the next four years, which shows 80 per cent of the burners being sold in this area, then there will be a demand for an additional volume of approximately 50,000,000 bbls. of distillate fuel per year for distribution along the Atlantic Seaboard, north of Richmond, Va., and east of Rochester, N. Y.

The sale of domestic burners has been further accelerated by the rapid decrease in average retail prices since 1929. The *Fuel Oil Journal* reports that the average price for a conversion burner installed in 1929 was $692, while this price has gradually decreased until the average price in 1936 was only $304, and a complete boiler burner unit could be purchased and installed for $627.

A regional breakdown of the 1936 heating-oil sales[5] indicates that the Middle Atlantic states (New York, New Jersey, Pennsylvania, Delaware, Maryland, and the District of Columbia) constitute the most important market for heating oils, and that this area accounted for nearly 39,000,000 bbls., or 39.3 per cent of the 1936 total. The 1936 deliveries in this region represent a gain of 28.7 per cent over the 1935 sales of 30,279,000 bbls. The North Central group of states (North Dakota, South Dakota, Minnesota, Nebraska, Iowa, Wisconsin, Illinois, Indiana, Michigan, Ohio, Kentucky, and Tennessee) wherein are located a number of important urban centers of population, such as Chicago, Detroit, St. Louis, Minneapolis, and Kansas City, ranks second as a consuming area for heating oils. Sales of heating oils in these states increased from 19,730,000 bbls. in 1935 to 27,015,000 bbls. in 1936. The latter total is 27.2 per cent of all heating-oil sales for the year, compared with 25.7 per cent in 1935.

The New England states stand third as a market for heating oils; they required 17,506,000 bbls. in 1936, compared with 14,040,000 in 1935. The remaining regions, i.e., South Central, Pacific Coast, South Atlantic, and Rocky Mountain, are of less importance as consuming areas for heating oils, and rank in requirements in the above order. It should be noted, however, that the South Central states became the fourth most important market for heating oils in 1936, supplanting the Pacific Coast area for the first time.

The following comments regarding the heating-oil market in the Pacific Coast area are credited to E. T. Knudsen of the San Francisco office of the U. S. Bureau of Mines:

"Demand for heating oils constitutes approximately 6 per cent of the total domestic fuel-oil demand in the Pacific Coast area (California, Oregon, Washington, Arizona, and Nevada) and is relatively of much less importance than in the balance of the United States as a whole. The comparatively mild climate and the large supply of natural gas in California tend to retard the growth of the use of oil for heating purposes, but during 1936 it is reported that sales of domestic oil burners increased appreciably in the Pacific Coast area, particularly in Oregon and Washington. In the Pacific Coast area it was not possible to obtain segregated heating-oil data showing the sales of lighter grades 1 to 4 and heavier grades 5 and 6, as was done in the balance of the country, partly because the Pacific Coast specifications of grades 1, 2, 3 and 4 do not coincide with the Eastern specifications, as grade 3 overlaps grades 4 and 5, and partly because the reporting companies do not yet consider this class of business of sufficient importance on the Pacific Coast to warrant the compiling of segregated data. Therefore, the sales by grades have been estimated."*

Sale of Fuel-Oil Burners

As is well known, the sales and operation both of domestic and industrial burners have rapidly increased since 1921. The number in operation has practically doubled since 1929, showing the industry to be almost "depression-proof." The reported number[6] of domestic-burner sales for 1936 was 220,000, or an increase of 40 per cent over the 1935 sales of 156,700. This number does not include range and space burners. These results look imposing, but the fact remains that they have sold only one oil burner to every 12 homes with central-heating plants in the United States. Last year the refrigerator industry sold 1,892,378 units, or approximately nine times the number of domestic oil burners sold. For the first seven months of 1937, some 1,898,656 refrigerators were sold, an increase of 15.2 per cent over the same period last year. The new burner orders for the first eight months of 1937 totaled 118,821, as against 102,442 in the 1936 period; and shipments amounted to 116,159, as against 99,866 in the 1936 period. This indicates the total sales this year will exceed the 220,000 burners sold in 1936.

Table 8 shows an interesting comparison of burner sales, operation, and fuel consumption.

Future Burner Sales

The U. S. Department of Commerce recently completed a survey[7] of heating installations in 64 cities, and found that only 3.9 per cent of all one-family houses were heated by oil. In this survey they covered 1,536,806 homes. They extended this

*See Table 10 for regional distribution of heating-oil sales, 1934-36. This table shows an increase of 29.1 per cent in 1936 over 1935. The same table also shows an increase of 26.8 per cent in range-oil sales during the same period.

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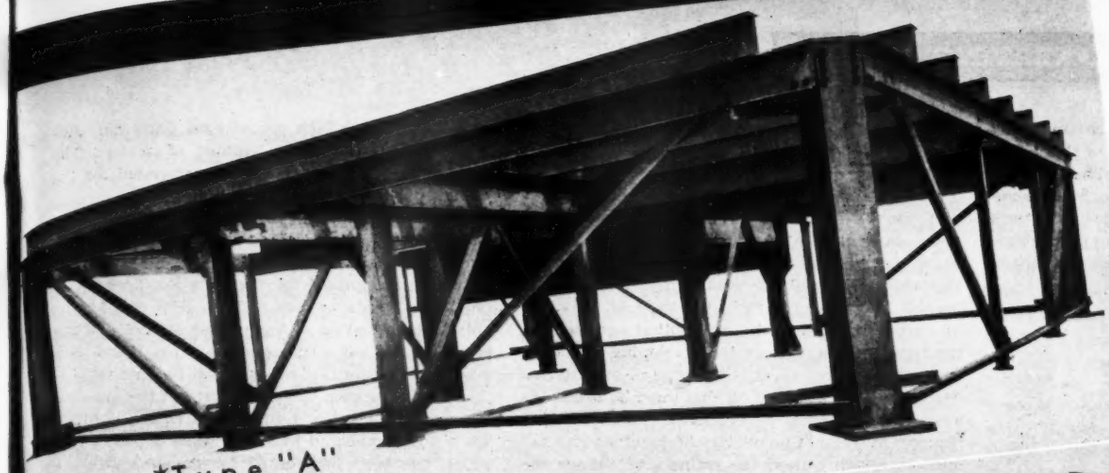

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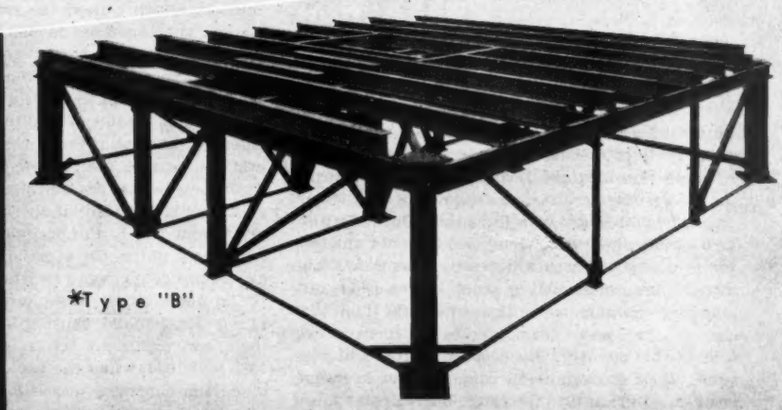

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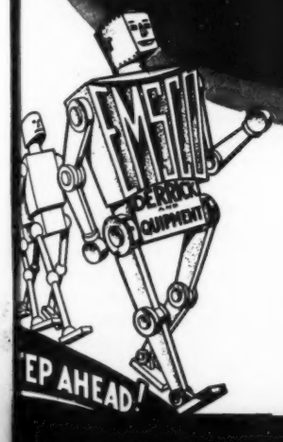

Ask For Bulletin No. 87-E

EMSCO DERRICK & EQUIPMENT COMPANY

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survey to 1,931,053 residential structures and apartments in the same 64 cities, and found that 85,702 or 4.4 per cent were heated by oil. These figures do not represent power burners alone, but in some areas the 4.4 per cent included range-oil burners. The same survey showed the following percentages of oil-burner installations against total structures in various geographical areas:

Area—	Per cent oil burners to total structures	No. oil burners
New England	19 5	33,819
Middle Atlantic	1 6	2,038
East North Central	1 1	4,190
West North Central	7 0	21,380
East South Central	0 1	162
West South Central	0 2	331
Mountain	1 4	1,276
Pacific	6 7	18,535
Total	4 4	85,702

No one expects that the oil-burner market will ever become as thoroughly saturated as has the automobile market. The automobile has become thoroughly established as a necessity in the minds of many families, while the domestic oil burner would often be classified as a luxury in areas where coal is available at a very low price. Our definition of a luxury, however, is subject to rapid change; for a luxury today is a necessity tomorrow. The modern kerosene-burning space heater is an outstanding example, as evidenced by the fact that during the past year 391,696 burners were sold in this country. Each space heater will consume about 400 gallons of range fuel or kerosene per year. During 1936 the range burners and space heaters consumed over 27,000,000 bbls. of fuel.

Shipments of distillate burners (range and space burners) for the first eight months of 1937 were 199,216, compared with 155,062 in the same period for 1936. On this basis, the total 1937 sales will approximate 50,000 units, and will consume some 5,000,000 additional barrels of fuel oil per year.

In most cases these burners are used in low-cost homes where central-heating plants are not available. The number of these space-heater installations has increased from 127,197 in 1932 to 970,853 in 1936, which certainly demonstrates that this type of heating with fuel oil is not considered a luxury.

A further proof that a domestic burner or boiler-burner unit is not a luxury is brought out in a recent statement from a nationally-known burner company that "60 per cent of the automatic-heating-equipment sales in 1936 were made to buyers with annual incomes between $1,800 and $4,500." A further evidence that burners are being installed in smaller homes is shown by a recent study of 100 installations which revealed that 90 per cent were for capacities of less than 1½ gallons per hour, while a few years ago the average would have been 2½ gallons.

Grade of Fuel Demanded for Burners

From the data collected on quantities and grades of fuels used in the past, we obtain some indication as to future demands; but the two important factors which really determine the trend of the fuel-oil business are: first, the type of units the oil-burner manufacturers are selling and, second, the type of fuels refiners are developing for use in these units. After all, it is the type of burner that determines the grade of oil that must be used. We have seen changes in burner construction and changes in trend of popularity of different types of burners which caused the refiners to change the fuel-oil specifications to meet that particular demand. Going further than this, the refiners must analyze the course of development in the burner business, and point their efforts along the indicated lines. Such studies are quite essential when considering that many times changes in refinery operations require entire new equipment, and such changes consume several months' work in design, construction, and initial operation. Also, the refiners cannot justify the purchase of such expensive equipment unless the demand for a special product can be projected over a satisfactory pay-out period.

An outstanding example of the type of burner in popular demand, causing the refiners to change their entire fuel-oil schedule, occurred between 1932 and 1936, when the rapid growth of range or blue-flame burners necessitated the refiners increasing their kerosene yields to meet this demand. During the year 1936 some 390,000 range and space heaters were sold in this country, and the average consumption of kerosene was about 400 gallons; or, roughly, these stoves required 4,000,000 additional barrels of kerosene per year. Fig. 1 shows that the total consumption of range fuel is more than 27,000,000 bbls. per year. This demand for range fuel also changed the classification of fuels on the Eastern Seaboard, as formerly kerosene was used largely for illuminating purposes and there was available a No. 1 fuel oil which met the "commercial standard specifications"; but, as is well known today, the No. 1 fuel oil on the East Coast was changed to a kerosene specification suitable for operation in a blue-flame or range burner.

The type of burners in use by the consumers will designate the grade of fuel that the refiner and distributor must handle. As is well known, the Underwriters' Laboratories in Chicago tests the various makes and and models of burners and approves them for safety when using a particular number or grade of fuel oil. The "1937-38 Specification Chart of Oil Burners," *Fuel Oil Journal*, lists oil burners of 352 trade names and makes, and involves some 1,108 models. This list, of course, includes burners which are several years old, thus accounting for the large number of models. The percentage of these models recommended for the various fuels is shown in Table 9.

If we consider separately the burners designated for domestic grade fuel, viz, fuel oils No. 1, 2, and 3, there is a total of 991 models. Again, grouping those designated for fuel oils No. 2 and 3 in one group, it shows that 88.1 per cent could probably be operated on a single grade of fuel, and the balance could use a kerosene grade No. 1 fuel. Another interesting fact brought out by this table is that only 13 models, or 1.13 per cent of the burners, are designed for No. 4 fuel. This figure is much lower than indicated by the volume of No. 4 fuel which has been distributed for domestic use, especially on the Atlantic Seaboard. The No. 4 grade is not approved for domestic use by the underwriters.

TABLE 9—TYPE FUEL RECOMMENDED FOR VARIOUS MODELS

Models: Per cent	Models: Number	Recommended for:	Fuel oil
10 23*	118		No. 1
10 06*	116		No. 2
65 65	757		No. 3
1.13	13		No. 4
4 34†	50		No. 5
8 59†	99		No. 6

*Of these models, 20 show recommendations for either No. 1 or No. 2.
†Of these models, 25 show recommendations for either No. 5 or No. 6.

The following figures* show the conversion-burner output by types from 1932 to 1936:

	1932	1936	Average for 5 years
	(All figures in per cent)		
Vaporizing	9 0	1 4	3 5
Vertical rotary	19 0	9 3	14 6
Horizontal rotary	5 0	1 0	2 5
Pressure	67 0	88 3	79 4

These figures show that a combination of horizontal-rotary and pressure-type burners would total about 90 per cent.

In many cases demands are made on the fuel supplier in order to obtain some selling advantage for a particular burner, such as a lower fuel price through a substitution of grades. The supply position has been complicated due to the use of gravity designations for fuel-oil grades rather than the use of "commercial standard numbers." This production with numerous grades was carried to a climax a few years ago when some of the pricing publications posted prices for 16 or 18 different grades of fuels, each separated by two points in gravity. Fortunately, most of the country has adopted the "commercial standard" designation for producing and marketing fuel oils. The only exception to this today is perhaps the Pacific Coast, where the nomenclature is somewhat different due to the fact that in many cases their domestic grade of fuel corresponding to No. 3 commercial standard is called diesel fuel.

There is one definite way in which the oil-burner industry and the fuel-oil distributors can assist the refiners in producing an adequate supply of fuel oil at a fair price. This assistance should be in the form of an earnest endeavor to reduce the number of grades of fuel now demanded for tank-wagon delivery. It is well known that we are operating in this country more than 28,000,000 automobiles of numerous makes and models on two primary grades of gasoline. It should be possible to operate all of the 350 different makes and models of domestic oil burners on two grades of fuel oil.

The recommended grades which should suffice for all of the different makes of domestic burners would be:

1. A light fuel oil of kerosene quality for sleeve and pot-type burners and those few power burners which require a No. 1 grade.

2. A grade for domestic burners shown above as vertical-rotary, horizontal-rotary, and pressure

TABLE 8—SALES, OPERATION, AND HEATING-OIL CONSUMPTION OF DOMESTIC OIL BURNERS IN THE UNITED STATES

Year—	(1) Burners operating beginning of year	(2) Sales	(3) Total burners	(4) Scrapped	(5) Burners operating end of year	(6) Average number in use during year	(7) Heating-oil consumption (barrels of 42 gallons)	(8) Per-burner consumption (barrels)
1921	12,500	9,000	21,500	.....	21,500	17,000	165,000	45
1922	21,500	35,300	56,800	.....	56,800	39,150	1,762,000	45
1923	56,800	43,000	99,800	.....	99,800	78,300	3,524,000	45
1924	99,800	79,700	179,500	800	178,700	139,200	6,264,000	45
1925	178,700	45,200	*223,900	46,500	177,400	178,000	8,010,000	45
1926	177,400	77,700	255,100	12,000	243,100	210,300	8,905,000	42
1927	243,100	82,700	325,800	3,800	322,000	282,600	11,709,000	41
1928	322,000	107,500	429,500	5,400	424,100	373,100	14,272,000	38
1929	424,100	131,300	555,400	7,900	547,500	485,800	19,581,000	40
1930	547,500	126,400	673,900	8,800	665,100	606,300	25,771,000	43
1931	665,100	104,000	769,100	8,300	760,800	712,900	24,659,000	35
1932	760,800	86,200	847,000	3,800	843,200	802,000	32,814,000	41
1933	843,200	89,300	932,500	12,200	920,300	881,800	35,190,000	40
1934	920,300	110,100	1,030,400	16,300	1,014,100	967,200	40,472,000	42
1935	1,014,100	156,700	1,170,800	16,100	1,154,700	1,084,400	49,903,000	46
1936	1,154,700	218,500	1,373,200	22,000	1,351,200	1,242,000	59,616,000	48

*Large number scrapped due to failure of large manufacturer; burners removed for lack of service.

Sources of information:
Columns 1, 2, 5—Oil Burner Institute.
3—Columns 1 plus 2.
4—Estimated on basis of burners operating at end of year.
6—Average of columns 1 and 5.
7—1921 to 1925 estimated upon the assumption that the average burner used 45 bbls. of oil annually; 1926 to 1931, U. S. Bureau of Mines; 1932 to 1935 estimated on basis of U. S. Bureau of Mines total heating-oil consumption figures and burners in use; 1936 estimated.

type. This could be accomplished by improving the present No. 3 grade by reducing the boiling range and adding a carbon-residue maximum. This grade would suffice for about 90 per cent of the burners.

3. This grade would consist of a residue fuel suitable for commercial burners, and could have rather wide specifications so as to meet the particular needs; would replace the present 4 and 5 grades, and could be used without preheating.

It is somewhat more difficult to lay down exact specifications for commercial burners; because some of this type are equipped with preheaters, and others must be furnished an oil suitable for

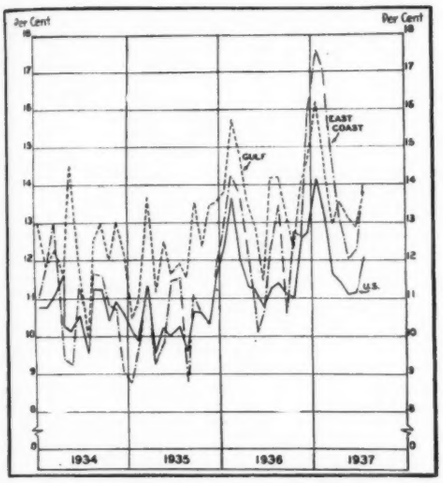

Fig. 5—Yield of gas oil and distillate fuel oil from crude oil

use without preheating. This simplification of fuel-oil grades would eliminate refinery equipment, duplicate storage tanks and lines; simplify bulk transportation, bulk terminals, retail storage facilities, trucks, etc.

In order to operate successfully a large number of different makes and models of domestic oil burners on this limited minimum number of grades, it is absolutely essential that the product be of the highest possible quality.

The combination of a satisfactory oil burner and a satisfactory fuel oil creates a "domestic utility" which should deliver to the consumer the ultimate in heating happiness. This can only be attained through close cooperation between the oil-burner manufacturers and fuel-oil producers. The refiner has several responsibilities in the successful operation of this "domestic heat utility," and of first importance is the quality of the fuel oil. This statement needs no detailed proof, because we have all seen the difficulties resulting from poor-quality fuels due to improper refining or impurities acquired during transportation and storage.

Fuel-Oil Specification Committees

Until a few years ago specifications of fuel oils were largely devised by each refiner to conform to his particular refinery operations; and, in many cases, had little or no regard for ultimate consumer requirements. After domestic fuel oils came into general use, it was found necessary to devise specifications, so that suitable fuel oils would be available for use in some 350 different makes and models of domestic and commercial oil burners which are being used in this country today. It was also necessary to develop specifications for specialized uses, such as in diesel engines, range burners, space heaters, tractors, and for unusual industrial purposes.

Specifications for fuel oil have been developed by the American Society for Testing Materials (D 396-34T), and these specifications have also been promulgated as "commercial standards" by the Division Trade Standards of the Department of Commerce.

The active group for fuel-oil specifications in the American Society for Testing Materials is Technical Committee E of Committee D-2 on Petroleum Products and Lubricants. Technical Committee E was recently appointed on the reorganization of former Technical Committee C into separate committees on burner fuels and diesel fuels. Technical Committee E is composed of representatives of producers of fuel oils and consumers—the latter group being represented in most cases by oil-burner manufacturers, and this committee is now studying possible improvement in the specifications.

To advise the Division of Trade Standards in connection with future revisions of the Commercial Standard for Fuel Oils (CS 12-35) a standing committee has been appointed consisting of producers, distributors, burner manufacturers, users, consumers, and safety interests. Revisions are promulgated only after acceptance by 60 per cent of the producing group.

After any change in the commercial standard for fuel oil it is customary for the Underwriters' Laboratories to test and reclassify burners according to the new specifications. The results of such a classification are given in Table 9.

At the present time the specifications have classified fuels into six grades, according to uses, as follows:

There are three grades of fuel oil recognized and recommended for domestic use. These grades are:

Domestic use—Fuel oil No. 1, fuel oil No. 2 and fuel oil No. 3.

For commercial use in hotels, apartment houses, office buildings, schools, churches, etc., the following grades are used:

Commercial use—Fuel oil No. 4 and fuel oil No. 5.

For industrial use in public buildings, steam generation in power plants, steamships, locomotives, industrial processes, etc., the following grade is used:

Industrial use—Fuel oil No. 6.

Future Supply of Fuel

After quality, perhaps future supply is the next important feature to consider.

Petroleum products are generally rated next to food, clothing, and shelter as essential to present-day living. This position in the scheme of human well being makes it natural that the public should be profoundly interested in the question of an adequacy of supply. Since the first discovery well in Pennsylvania in 1859, there have been innumerable warnings of petroleum scarcity. In the past 20 years the U. S. Geological Survey has made some 11 official surveys of the petroleum reserves, and usually the later estimates exceeded the earlier ones.

For several reasons the problem of petroleum reserves should not be a source of concern to those interested in the sale of oil burners and fuel oils. First, the geologist and engineer have replaced the old-time prospector who located wells by means of the divining rod or intuition. The success of these modern methods is demonstrated by their uncanny ability to predict the presence of oil and the actual depth at which it will be found. Second, the modern refining methods have increased the yield of the more valuable products, as shown by the fact that in 1914 only about one-sixth of a barrel of crude was converted into gasoline; while today, through cracking, polymerization, and other technical improvements, the average yield has been increased to 44 per cent. It is estimated that cracking has conserved approximately 40 per cent of the total crude runs to stills in the past 16 years. Third, it is estimated the shale-oil reserves[9] located in our western states would be sufficient to supply our present rate of consumption for more than 100 years. This deposit is located largely in the Rocky Mountain states, and it is estimated it contains a potential supply of some 92,000,000,000 bbls. of crude oil.

The proved reserves[10] of crude petroleum in the United States as of January 1, 1936, were estimated at 13,063,000,000 bbls. of the standard 42 gallons. This estimate was prepared by a committee of geologists, geophysicists, and petroleum engineers selected by the American Petroleum Institute, and is unquestionably reliable.

Seasonal Demand

In order to maintain a satisfactory, fuel-oil-gasoline supply-demand relationship, it will be necessary: 1, that the winter demand for gasoline continue to increase; 2, that in the process of meeting the seasonal demand for fuel oil an excess of gasoline is not produced.

It is quite apparent that both conditions (1) and (2) are greatly affected by the unpredictable factor of weather. Thus the winter 1936-37 was unusually mild (about 9 per cent less degree-days in New York area) which permitted a higher level of gasoline consumption and required less current winter production of fuel oils. Table 11 (U. S. Bureau of Mines) shows a comparison of fuel-oil production for the past three heating seasons during winter months. This shows an increase in distillate fuels of 27.56 per cent in 1935-36 severe

TABLE 10—REGIONAL DISTRIBUTION OF HEATING-OIL SALES, 1934-1936*
(Thousands of Barrels of 42 gallons)

Region—	1934	1935	1936	Per cent of increase in 1936 over 1935
Pacific Coast	4,347	5,586	6,525	16 8
Rocky Mountain	246	319	400	25 4
North Central	16,324	19,730	27,015	36 9
South Central	4,180	5,260	6,634	26 1
New England	10,793	14,040	17,506	24 7
Middle Atlantic	23,497	30,279	38,956	28 7
South Atlantic	1,435	1,639	2,213	35 0
Total United States	60,822	76,853	99,249	29 1

REGIONAL DISTRIBUTION OF RANGE-OIL SALES, 1934-1936
(Thousands of Barrels of 42 gallons)

Region—	1934	1935	1936	Per cent of increase in 1936 over 1935
Pacific Coast	459	548	596	8 8
Rocky Mountain	43	67	80	19 4
North Central	951	1,522	1,944	27 7
South Central	331	937	1,222	30 4
New England	9,912	12,530	14,505	15 8
Middle Atlantic	3,869	5,208	8,036	54 3
South Atlantic	191	714	909	27 3
Total United States	15,756	21,526	27,292	26 8

Note 1.—All the 1936 items shown in this report are preliminary, and are subject to revision.
Note 2.—The data for California, Oregon, Washington, Arizona and Nevada were compiled by E. T. Knudsen, assistant economic analyst, U. S. Bureau of Mines, San Francisco, Calif.
*By A. T. Coumbe, associate analyst, Petroleum Economics Division, U. S. Bureau of Mines.

winter season as compared with previous season, and a total increase of all grades of fuel oils of 21.02 per cent. For the season 1936-37, with a milder winter, this yield over previous season decreased to 5.58 per cent, which was more in line with increase created by additional burner installations. The decreased production of residual fuel oils in 1936-37 is more pronounced than for distillate fuels.

Effect of Weather on Demand

Both the fuel-oil producer and the fuel-oil distributor have difficulties in balancing the production against demands because of the unpredictable weather feature. It is not generally recognized that, for a normal heating season, the distributor must be prepared to deliver approximately 53 per cent of the total season's requirements in the months of December, January and February, while the balance is consumed over an additional six-months' period. In the case of kerosene or range fuel, the distributor must be prepared to deliver approximately 39 per cent within the same three months, but this peak demand is not so apparent because kerosene or range fuel is used throughout the year for cooking in addition to heating. Table 12 shows deliveries of fuel oils by months, and the figures are corrected to average normal temperatures taken from average degree-days for the past several years in the New York area.

In addition to being required to deliver some 53 per cent of a three-months' period, this percentage is estimated to be normal, and can be increased or decreased as much as 15 per cent above or below the normal figure by the uncontrollable weather factor. This means that the 53 per cent can be increased to 60 per cent with subnormal weather conditions. These percentage deliveries by months are very useful in projecting sales demands.

Because of the fact that it is not possible to change over refining operations to produce only fuel oil during any period, the refiners must project their production schedule several months ahead of the actual demand. Because of seasonal demand and rather concentrated consumption in metropolitan areas, a considerable volume of the fuel oil must be stored at the point of consumption. This is especially true on the Eastern Seaboard where much of the fuel oil is produced in the Gulf, and must be transported in tankers operating under regular schedule. This peak-demand feature is just another one of the petroleum refiner's and the producer's problems brought on by the weather man.

The Fuel-Oil Distributor

Fuel-oil distribution has a very important part to play in establishing successful "heat service" for the customer. The importance of a quality fuel oil has already been discussed; and, in addition, the fuel oil distributor has added several desirable service features for the domestic customer. First is the automatic delivery, or "keep-filled-service," which places on the distributor the responsibility for maintaining an adequate supply of fuel oil in the customer's tanks regardless of weather conditions. This function is carried out by one or more operating methods, such as route delivery, whereby the customer is visited at regular intervals, or by use of tank checkers who measure fuel in customer's tanks and route delivery trucks accordingly. The latest and most successful method is by use of the "degree-day delivery system." [11] This method is not complicated, and affords a definite advantage to the customer and lower delivery costs to the distributor. The use of any one, or a combination of these systems, eliminates the problem of constant supply from the customer's mind, and takes away from the gas company the most popular argument against the use of fuel oil.

The distributor now utilizes meters for fuel-oil deliveries, thereby eliminating any question as to volume delivered, and places the measurements on a par with gas and electric deliveries. In addition to meters, some of the fuel trucks are now equipped with printing devices which print on the customer's delivery receipt the actual number of gallons delivered. All of these service features furnished by the fuel-oil distributor certainly assist in selling oil burners and in keeping them sold to present users.

Certainly, many householders are "automatic-heat" conscious today; yet in the United States there is only one oil burner installed in every 12 homes with central-heating systems. The demand for heat is a recurring necessity, and their "heating dollar" is now in circulation and will go to the distributors who provide the most satisfactory "heat service."

Conclusion

The market for domestic oil heating, the greatest contributor to human comfort and convenience, has hardly been furrowed. It has been shown how the very rapid installation of oil burners in the past few years has changed the refiner's production schedule and, further, that an adequate supply of fuel oil has been and will be available to the consuming public at a reasonable price. There is, however, one definite way in which the oil-burner industry and the fuel-oil distributors can assist the refiners in producing this adequate supply of fuel oil at a fair price. This assistance to the refiner should be in the form of an earnest endeavor by these interested parties in reducing the number of grades of fuel oils now demanded for tank-wagon deliveries. It is well known that we are operating in this country more than 28,000,000 automobiles of various makes and models on two primary grades of gasoline. It should be possible to operate all of the 350 or more different makes and models of domestic oil burners on two primary grades of domestic fuel oil. The commercial burners operating fully automatic and without preheaters should be supplied with a grade to meet this service, and still another grade of heavier fuel should be available for industrial use. With this reduction in the number of grades of fuel oil to a total of four, the refiners can use their full efforts in producing quality fuel oil in volumes sufficient to meet the increasing demand.

It is well recognized that fuel oil must be inexpensive enough to stimulate the sale of oil burners, and must be generally available; and, finally, there must be a sufficient demand for standardized products to interest the petroleum industry in its production and distribution. The petroleum industry fully realizes the importance of producing fuel oils for this rapidly-expanding market, and has been rewarded for this service by an increase in the number of satisfied customers and an unprecedented increase in sales volume.

Finally, when we consider the magnificent technical improvements made in late years in the production, refining and utilization of fuel oils and their adaptation to the services of mankind, we can look into the future with complete trust in the continued development of this important part of the petroleum industry.

TABLE 11—COMPARISON OF FUEL-OIL PRODUCTION—1934-35, 1935-36, 1936-37*

(Figures in Thousands of Barrels)

Months	Production 1934-35	Production 1935-36	Increase 1935-36 over 1934-35 (per cent)	Production 1936-37	Increase 1936-37 over 1935-36 (per cent)
Gas oil and distillate fuel:					
November	8,044	8,598	6 89	11,201	30 27
December	8,136	9,885	21 50	11,875	20 13
January	7,696	10,587	37 56	13,319	25 80
February	7,001	11,125	58 91	11,206	0 73
March	8,678	10,262	18 25	11,005	7 24
	39,555	50,457	27 56	58,606	16 15
Residual fuel:					
November	19,917	23,660	18 79	23,671	0 04
December	21,086	25,043	18 77	25,670	2 50
January	20,545	24,573	19 60	25,453	3 58
February	19,480	23,751	21 92	22,222	†—6 44
March	20,822	23,667	13 66	25,081	5 96
	101,850	120,694	18 50	122,097	1 16
Total fuel oil:					
November	27,961	32,258	15 37	34,872	8 10
December	29,222	34,928	19 53	37,545	7 49
January	28,241	35,160	24 50	38,772	10 27
February	26,481	34,876	31 70	33,428	†—4 15
March	29,500	33,929	15 01	36,086	6 36
	141,405	171,151	21 02	180,703	5 58

*U. S. Bureau of Mines. †Denotes loss.

TABLE 12—DELIVERIES OF FUEL OILS BY MONTHS

(Figures in Per Cent)

	September	October	November	December	January	February	March	April	May
Kerosene	6.1	8.3	9 5	13 0	13 3	13 1	9 6	9.1	5 4
Fuel oil	4.1	7.2	9.1	17 3	18.4	17.7	9.4	7.1	3 2

Note: These per cent delivery figures are corrected to average normal temperatures taken from average degree-days for the past several years.

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Advancements in New Automobiles

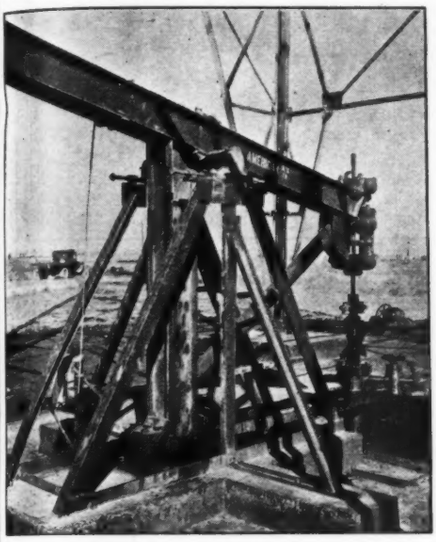
The automobile industry is to be congratulated for the technical advances featured in the 1938 models now being presented, according to Dr. D. P. Barnard, assistant director of research, Standard Oil Co. (Indiana). Among the improvements are coiled spring rear suspension, more conveniently located gear shift levers, automatic gear shift, vacuum operated gear shift, shock proof steering, sound proofing of bodies and greater roominess in bodies.

Automobile manufacturers have continued in their efforts to provide quieter and smoother operating engines. Many of these 1938 refinements in engine design are the results of many year's effort by the Cooperative Fuel Research committee, which is sponsored and supported by both the oil and automotive groups. Engine lubrication has also received its share of attention.

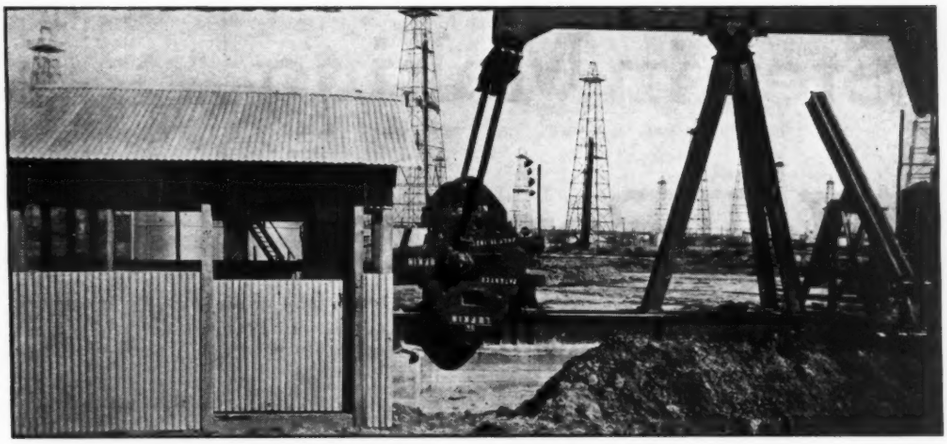
OPERATING IDEAS

Jack-Operated Chemical Pump

Chemical feed pumps used in "down the hole" treating at Talco are being operated in a number of different ways. Here is shown how one operator is transferring pumping



motion to the chemical feed pump through a one-quarter inch rod extending down from the walkingbeam on the pumping jack. The copper tube through which the chemical is transferred from the pump to the wellhead is shown in rear of the pumping jack.

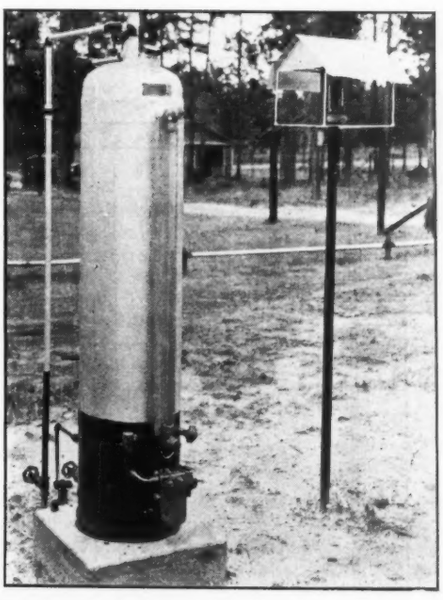


Ventilating Engine Room of Pumping Unit

Continuous pumping is necessary on most Talco wells, particularly in the heavy water-producing areas. Gasoline multicylinder motors are used on the great majority of pumping units, and due to the heavy loads and continuous pumping some trouble has been experienced in the motors running hot. Also, supplies of fresh water are scare in Talco. Therefore, it has become common practice to leave a portion of the engine house open on all sides, and cover the open portion with big mesh wire. In this particular installation, the motor is set on stilts so it will be on the level with the openings in engine house in order to be more exposed to the air.

Odorizing Gas for Home Use

Since the London school disaster in Texas in the early part of this year, the state has passed a law which prohibits natural gas, either wet or residue, to be used for home consumption without being odorized by special fluid that is held under pressure in a steel cylinder, allowing a small portion of this chemical to be mixed with the fuel gas. Any small



leaks present in the fuel system can be detected due to strong odor given off by the gas. The odorizer shown here is serving an oil company camp and contains sufficient fluid to last one year. For an ordinary residence, a cylinder containing about one quart of fluid will odorize sufficient gas to last a family one year. This fluid is entirely harmless although its odor is somewhat nauseating.

Concrete Slabs for Well-Servicing Trucks

Several major oil companies operating in Andrews County, Texas, have installed at each well a concrete slab of sufficient size to accommodate well-servicing trucks. At each corner of the slabs an I-bolt is set in the concrete, and connected to the bolts is a turnbuckle which fastens into each corner of the truck bed. By adjusting the turnbuckles the truck is held level and firmly in place while the well is being serviced. Installations of this type are required due to the sandy nature of the soil, since if the slabs were not used the tires would sink in the sand and cause excessive wear on various parts of the machine by their being off level.

Locating Water Source Is Initial Step in Making Well Repairs

By C. R. DALE and H. GUYOD
President, Dale Service Corp. — Chief Engineer, Schlumberger Well Surveying Corp.

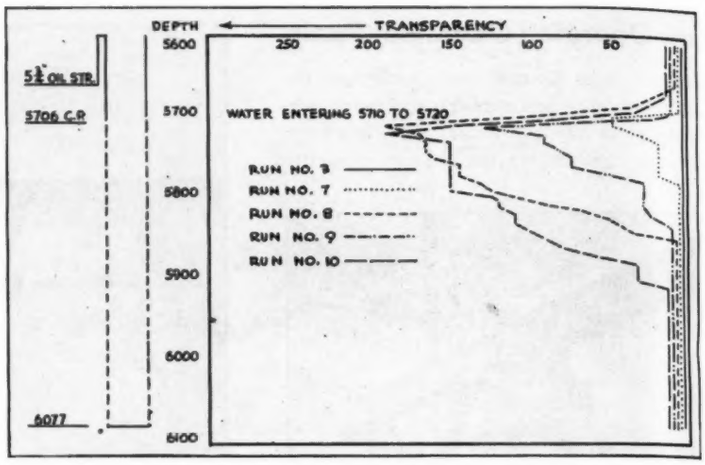


Fig. 1—Chart of a photoelectric water-locating survey performed at Signal Hill, California, showing the source of entering formation water to be from 5,710 to 5,720 feet

During 1936 the water cut in California oil fields as a whole amounted to 43.97 per cent, according to official figures. While similar figures are not available for most of the other oil-producing states, it is estimated that the percentage of water produced elsewhere is as great or greater than in California. Startling though the figure for an entire state may be, the records kept in many individual fields throughout the country show the water cut to range from 40 to 90 per cent, and indicate that it is increasing yearly. In many localities, especially in Mid-Continent fields, the cost of disposing of the tremendous volume of water is taking a large slice of the operator's profit yearly, not to mention the cost of lifting where wells are pumped.

The problem of reducing the water cut is, of course, not a new one. Repair methods are well understood and every field is a scene of almost continuous reconditioning activity. Great skill and inventiveness have been displayed by the men in charge of the repair work in devising methods and equipment to accomplish their purpose, and in applying the products of manufacturers. The fundamental handicap has in the past been the lack of accurate information as to the point or points at which the formation water was entering the well. Now, however, modern oil-well water-locating service is available in practically all fields, and repair work is being performed with greater success and less expensively than ever before.

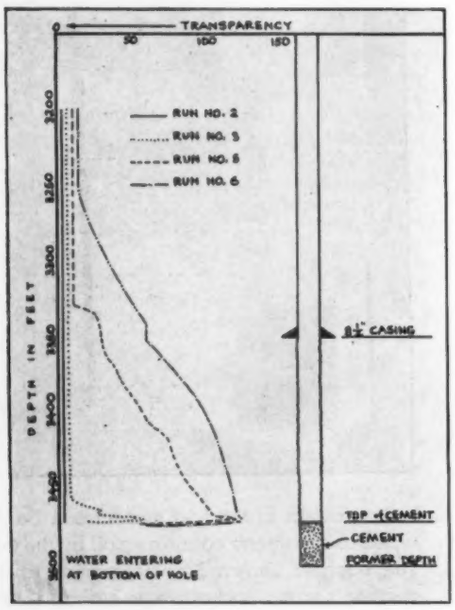


Fig. 2—Formation water entering from a strata between the top and bottom of a bottom cement plug was located at the top of the plug on this initial photoelectric water locating survey

Determining Point of Entrance

The time to determine the point of entrance of water and to take steps to repair the well, whether it be a new completion or an older producer, is when the intrusion of formation water first takes place. This practice will save the operator a great deal of money in repairs, lifting cost and lost production, and will protect his lease and the rest of the field.

In many cases water entering the well above the producing zone through holes in the casing or at the shoe forces its way into the productive sand during periods when the well is shut down and acts as a seal against the entrance of oil. The effectiveness of the seal thus formed increases as the pressure of the water is increased, and the upper waters are usually of high head. Figure 1 shows a photoelectric water-locating survey made in a well at Signal Hill, California. This well, once a good producer, showed an exceptionally high water cut before repair work was finally commenced. As will be seen, the water was found to be entering between 5,710 and 5,720 feet through perforations in the casing. The intrusion of formation water from above the oil zone had flooded the producing sand. Repaired and returned to production, this well again became a good producer with but a small water cut.

A similar example is found in the case of a 7,600-foot well in a Texas field. A flowing well, it had produced about 100 bbls. of oil daily, together with large quantities of water for nearly a year before the well was killed and a photoelectric water-locating survey run to determine the point of water intrusion. In order to permit clear water to enter from the formation during the survey, the fluid was bailed gradually until the level reached 1,200 feet. At this level the head in the well was low enough to allow water to enter through the holes in a perforated collar located at 5,110 feet. Had repairs been undertaken when the water cut first increased, a year before, the operator would have been ahead many thousands of dollars in production.

Where serious water-flooding of the producing zone has occurred over a long period of time, one cannot expect the repaired well to produce clean oil immediately upon being returned to production. Such great quantities of water may be injected into the oil sands that several days or several weeks of steady production will be required to exhaust the water. A repair job should not be classed as a failure, therefore, until the well has had ample opportunity to clean itself up.

A very common type of water-source determination and repair work is shown by the graph in Figure 2. It shows a survey made in a well in the Cushing field, Oklahoma. The survey shows water entering immediately above or around the top of the cement plug placed on bottom. The plug was drilled out and another survey made, which disclosed that the water was actually entering from a strata between 3,475 and 3,486 feet, and had traveled up around the plug and into the hole. A new cement plug was placed and the water flow stopped.

Repairing California Well

In older fields where repairs are often difficult because of a lack of accurate information, or because of the poor condition of the hole or casing, it nevertheless frequently pays handsomely to work over the wells and exclude water. This is illustrated by a well at Long Beach, California, which had produced 3,500 bbls. of oil in a three-month period before it was decided to place a plug at bottom in an effort to reduce the water cut. Although plugs were placed four times unsuccessfully, the fifth plug was reasonably satisfactory and in the following three months production rose to 9,000 bbls. for the period.

Although casing cement jobs are usually successful, they occasionally do fail, or the casing may be set too high to exclude water. Subsequent repairs made by squeezing may be unsuccessful, as was the case in the well in which the photoelectric survey shown in Figure 3 was made. A remedy that has proved successful for this type of trouble is shown in Figure 4. A blank stub liner is run which extends up into the casing and downward to some impervious formation below the shoe. Cement is circulated around the stub liner, thus

(Continued on Page 70)

Measurement and Control in Refinery Processes

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The operation of any unit of an oil refinery, whether it be the power station, cracking unit, treating plant, etc., consists basically of the two-phased problem of control and mechanical maintenance. As maintenance is usually handled by a separate department, the operator is consequently concerned primarily with control. His principal function is to see that the important variables are so controlled that optimum conditions are maintained. In order to effect proper regulation he must have information on the conditions in the unit and the products of the process. Instruments and laboratory inspection data are the main sources of such data but neither is adequate by itself. However, inspection data are available intermittently and only after a considerable lapse in time, whereas instruments provide continuous and instantaneous indications. Therefore, adequate measuring instrumentation is a major essential for successful process control.

The principal variables which are common to all processes are flows, temperatures, liquid levels and pressures. In general these items are measured by different means but almost without exception they are controlled by the *regulation of flow*. Since this last is common to all, it will follow "measurement" in the succeeding development.

Before entering into a discussion of modern trends, it is desirable that the fundamentals be reviewed and that various terms be defined.

Measurement of Flow

The gauging of tanks is the most accurate normal means of determining quantities for yields and accounting purposes but is of little value to the operator in the strict problem-of-the-moment sense, because it does not furnish a continuous indication of the *rate* of flow and is inapplicable to intermediate and recycle quantity measurement. Hence the necessity for flow meters. Flow may be measured by weighing, weirs, and thermal, volumetric, velocity, area and differential pressure meters. As weighing and weirs are normally restricted to special test work and thermal and velocity type meters are not commonly used, they will not be discussed. Volumetric meters, such as the residence type gas meters, are seldom suitable for refinery use, but the types similar to the home water meter find some application. Their use is restricted mainly to measuring fluids where rate-of-flow indication and automatic control are unnecessary because of the difficulty in satisfactorily adapting them to such service. Area type meters work on the principle of a weighted sliding orifice which adjusts itself to maintain an orifice opening which always produces a pressure drop just sufficient to balance the weighted plate or disc and the position of the "plate" is then translated into terms of flow. Since an electric transmission system makes exterior connections to the flowing fluid unnecessary, the area type is gaining favor in metering tars and similar viscous or sediment-bearing liquids which would plug the meter connections in pilot tubes and ordinary orifice installations. One particular type of area meter which is being applied to refinery work consists of a vertical chamber in which a "float" rises and falls in accordance with the rate-of-flow. It is particularly useful for indicating the flow rate of clear or light colored fluids, as the "float" is enclosed in a glass tube bearing the calibration marks. An electric transmission system permits the use of remote indicators and recorders.

The great majority of refinery flow metering requirements are handled by means of venturi tubes, flow nozzles, or orifice plates, any of which creates a pressure drop which is a function of the rate-of-flow and can be measured. Since the differences between the three types are mainly in the details of the method used for producing the pressure drop, they will be grouped as "orifice meters" to simplify this discussion. The differential pressure can be measured by several means, all of which entail mechanical movement which may be linked directly to an indicating or recording pointer or transmitted electrically to remote meters. Unfortunately, the differential pressure varies as the square of the rate of flow. This fact limits the accurate range of orifice meters and in cases of widely varying flow rates it is usually necessary to provide a greater range than can be satisfactorily attained in a single meter. If the variations are sudden or frequent, the simplest method is to provide a low and a high-range meter operating in parallel on the same orifice. If the change from one extreme flow to the other is to be known in advance, manual range-changing is possible and double range meters, parallel orifice installations, or orifice fittings in which the plate can be changed under pressure may be satisfactorily employed. In the case of very extreme changes a combination of parallel meters and parallel orifices or changeable orifices may be necessary.

Factors Causing Errors

It is not unusual to encounter capable, intelligent refinery men who have little faith in orifice meters because of unsatisfactory experience which almost without exception can be traced to misapplication or improper installation and servicing. Some of the factors which may lead to erroneous results are:

1. *Misapplications.* For example, the orifice meter cannot measure the flow of a mixture of liquid and vapor.

2. *Improper Sealing.* Viscous or dirty oils, corrosive fluids, and fluids which emulsify with mercury must be kept out of the meter by means of suitable sealing liquids. If the specific gravity of the seal is different than that of the flowing fluid (at atmospheric temperature) this must be cared for in the calibration and equal seal levels on both sides of the meter must be carefully maintained.

3. *Plugging of Meter Lines.* High pour oils should have steam heating lines from the orifice to the seal chambers. Meter lines on dirty stocks should be cleaned frequently.

4. *Pulsating Flows.* Orifices should be located as remote as possible from reciprocating pumps or compressors if correct readings are to be obtained.

5. *Viscosity Corrections.* In certain cases of metering high-viscosity stocks, corrections must be applied which are not contained in the ordinary flow formulas.

6. *Gas Density Corrections.* Refinery gases at high pressures do not follow the perfect gas laws on which the usual formulas are based and corrections may be necessary.

In spite of the several potential sources of trouble, the orifice meter is nevertheless a relatively simply, reliable instrument and satisfactory results can be assured by proper engineering and intelligent maintenance.

Temperature Measurement

The principle of the differential expansion between two metals has long been used as a means for measuring temperatures but finds limited application in the refining field because of its limited accuracy at the high temperatures encountered.

The mercury in glass thermometer is widely used in the forms of laboratory and industrial thermometers. Its use is restricted because both types are nonrecording and are not adaptable to remote reading.

The pressure produced by the expansion of fluids when heated is used as a measure of temperature in many instruments. We are all familiar with the bulb and capillary tube type of indicating and recording thermometers which are extensively used in refinery practice. They are inexpensive, simple, easy to maintain but are not generally available for high temperatures, cannot record more than possibly three temperatures on a single instrument, the less expensive types ean not be greatly over-ranged without damage, and all are susceptible to injury or breakage of the capillary tubing. They are highly developed and much has been done in recent years to reduce the importance of some of these weaknesses. Tubing which is damaged mechanically or by fire cannot be repaired in the refinery because the cost of the necessary equipment is usually prohibitive. For some types, spare tubing systems may be carried in stock but the cost is considerable. Other types must be returned to the manufacturer for repairs which, in the case of important instruments, necessitates providing a temporary replacement of some sort.

Certain metals and alloys show appreciable change in electrical resistance when subjected to a temperature change. The resistance thermometer translates this change into terms of temperature with a very high degree of accuracy. The instrument may be indicating or recording and remote from the point of measurement. The wiring connections must be very carefully maintained as the development of electrical resistance in the circuit results in erroneous readings. The corrosive atmos-

*Presented at the Conference on Refining Measurement and Control, Oil-World Exposition, Houston, Tex., October 13, 1937.

phere prevalent in refineries and the not unusual necessity for splicing in sections of wiring to replace those damaged by fire, makes it rather difficult to keep resistance thermometers in good order. As a consequence pyrometers which are cheaper, sufficiently accurate and not so susceptible to the above troubles are generally used, except in low temperature work such as tube refrigerating systems, etc., where pyrometers are not applicable and where fires are possibly less prevalent.

Pyrometers are the most generally used instruments for remotely indicating and recording temperatures. A junction of two dissimilar metals (thermocouple) generates a voltage which is a function of temperature and the pyrometer measures this and translates it into terms of temperature. A single indicating instrument can be connected by switching to any one of any desired number of points and recorders are available with a dozen or more points. The two available types are the millivoltmeter and the potentiometer. The former is quite simple but has certain limitations among which is the fact that it is adversely affected by resistance changes in the wiring system, although to a much less extent than the resistance thermometer. The potentiometer is unaffected by ordinary resistance changes and can be used for narrower temperature spans and as a consequence the millivoltmeter type is now seldom used in new installations.

Optical and indicating and recording radiation pyrometers are used to some extent for test work but in general their applications are mainly in other industries.

The bugaboo of temperature measurement, particularly when used for automatic control, is time lag. The elapsed time between the instant when a temperature changes and the time when the change is recognized by an instrument, must be kept to a minimum. The change in flowing fluid temperature must be conducted through the fluid film on the outside of the socket or well which protects the instrument element, through the socket wall and into the element. The socket is generally metallic and so thin that it is a minor factor. It must be assured that the element has the minimum practical mass and makes the best possible contact with the socket as an intervening air space introduces considerable lag and may also cause a low reading. A layer of coke on the outside of the socket will also introduce a very appreciable lag and will often cause low readings due to its poor heat conductivity. To minimize this trouble, sockets should be as long as practical and should be installed, if possible, in such a manner that coke will not tend to accumulate.

Liquid Level Measurement

The simplest means of level determination which has come to the author's attention is the one reported to have been used by the saw mill fireman who tapped the boiler drum with a hammer to find the water level. Other methods in the same category but on a slightly higher plane, are trycocks and gauge glasses. They are both purely indicating and cannot be made recording in that form. The latter is unsatisfactory on heavy or coke-bearing stocks, as the connections plug up.

The ordinary external float and cage or kidney-type level instrument is doubtless familiar to all. The motion of the float is transmitted to the outside by a shaft passing through a stuffing box, and may be made to indicate or record directly, or electrical or air pressure transmission may be used for remote lights or indicating and recording instruments. Its maximum range is limited to possibly two feet by the size of the float cage. It is of little value on coke bearing or waxey stocks because the connections to the vessel plug up. Internal floats provide ranges up to say 6 feet in large vessels and are especially suited for heavy tower bottoms because there are no connections to plug and the stuffing box can be kept clear by the continuous injection of small quantities of clean flushing oil. A float can be adapted to practically unlimited ranges by attaching it to a chain which passes over a sprocket attached to a shaft passing through a stuffing box.

Level may also be determined by measuring the differential pressure between connections located above and below the surface of a liquid. The instrument employed is basically the same as the orifice meter and is available in all types. The range can be either narrow or fairly wide and for this reason it is more flexible than the float type. However, coke bearing or waxey stocks plug the connections and the use of flushing oil to prevent this has not always been successful.

Frequently it is desired to determine the water level in gas separators or other vessels in which a layer of water lies beneath a layer of gasoline. The only direct means are the use of trycocks gauge glasses or a kidney-type float in which the ball is carefully weighted so that it will float in the water and sink in the light oil. The last is fairly successful but the power developed is so small that care must be used to minimize friction. Differential type meters are occasionally used, but the readings are incorrect since they show the combined height of the water plus oil in terms of, say, feet of water. However, it is fairly successful for automatic control purposes, particularly in the cases where the maximum gasoline level is maintained essentially constant by allowing it to flow over a separating baffle into another section of the vessel.

Pressure Measurement

Pressures are usually measured by means of the conventional Bourdon tube pressure gauge, flexible bellows such as used in lower pressure recording instruments and the modified coiled Bourdon tubes found in the majority of the instrument type indicators and recorders. Low pressures may also be indicated by the use of open-ended manometers, flexible diaphragms, and the submerged bell used in certain draft gauges. All of these are adaptable to recording instruments and to remote transmission by electrical or pneumatic systems.

All of the above instruments actually measure the pressure *differential* between the point under consideration and the atmosphere. This fact is of no general importance because atmospheric pressure changes are negligible or unimportant except in high vacuum work. In this case very close measurements are essential and the usual instruments are not sufficiently accurate, since variations of a few millimeters of vacuum may appreciably affect operation. However, several instrument companies market absolute pressure gauges which are compensated for atmospheric pressure and thus indicate the true vacuum.

Pulsations may make accurate pressure measurement difficult. Fortunately, throttling on the gauge valve will usually give reasonably accurate results. If the pressure of viscous oils is to be measured, it is frequently desirable to either heat the gauge lines by means of closely paralleled steam lines or to fill the gauge line with low-viscosity sealing fluid.

Manual Control

As previously stated, the major part of process control is effected by regulating flows. In order to accomplish a given result, the necessary change may be made directly or indirectly. For example, if a furnace charge rate is too high, it is corrected directly by reducing the flow. On the other hand, if the endpoint of an overhead stock is high, it may be corrected indirectly by increasing the flow of reflux.

Manual control is most commonly effected by means of globe, gate and specially designed valves. Globe valves are very satisfactory where a tight shutoff is necessary but they are unsuited for throttling service because a large percentage of their effective opening occurs during the first quarter of the actual disc and stem travel. Gate valves are preferable because the ratio of valve capacity to travel is considerably better than in the globe type. However, for more accurate control special valves with characterized discs, such as the V-port type, should be used. Manual control may be centralized by the use of remote operating devices such as direct connected shafts or fluid and electrical valve operating devices.

Automatic Control

Automatic control is effected by adding to a measuring instrument the auxiliary equipment which will enable it to operate a valve or other regulating device. This may be effected by either direct or amplified power. One of the simplest examples of the former is a kidney-type liquid-level float connected directly to a valve. The level rises, lifting the float, thus opening the valve, and vice versa. However, this example is not representative because in most instruments the power available is inadequate to operate the valve. Consequently, the controller must include an amplifying device which steps up a very small force to power adequate for valve operation. This amplified power may be electrical or in the form of a fluid under pressure such as air, gas, water or oil. These amplifiers are of varying designs but are all identical in the respect that they do not and cannot recognize the position which the controlled valve assumes. In other words they do not "know" whether a valve is nearly wide open or nearly shut off. Therefore, they make the same correction for a given deviation from the control point and consequently the controlled valve must have as nearly a constant ratio of per cent travel to per cent opening as possible if good control is to be obtained. As neither gate nor globe valves have satisfactory ratios, the special valves which are normally used are provided with parabolic or V-port discs which have the desired characteristics.

The proper design of control valves is of major importance. Since the fluid pressure operated valve predominates, it will be discussed briefly. It consists essentially of a disc attached to a stem which passes through a stuffing box and is connected to an enclosed flexible diaphragm. The application of fluid pressure to the diaphragm causes the stem and hence the disc to move in one direction, thus either opening or closing the valve. Since this movement is opposed by a spring, the valve assumes its original position when the fluid pressure is released. In view of this method of operation, it is important that the valves have discs of the double seated balanced type in order to minimize unbalanced forces which could cause incorrect positioning. Spring hysteresis and stuffing box and other friction may cause a valve to operate sluggishly or jerkily. Such a condition obviously results in poor control. Frequently such a condition may be avoided by proper design and maintenance. However, since friction cannot be entirely eliminated, in cases where close control is necessary, and a valve is required to move very gradually in small increments, it is desirable to attach to the valve a "valve positioner." This device recognizes a demand for valve position change by the control instrument and in the event the new position is not assumed, applies and adjusts auxiliary power until the correct position is established.

Valves may be operated electrically through motors and solenoids. The use of motor drive is seldom used in new installations except for remote manual control from push button stations. Solenoid valves are not adaptable to throttling service and are rarely used except on open and shut emergency applications for starting and stopping equipment.

It is not unusual to encounter an automatic

control problem in which the range of a single control valve is inadequate to meet all conditions. For example, the maximum load requires a large valve which is satisfactory for this condition, but low loads necessitate operation of the valve just off its seat and as a result the control is poor and the valve trim is damaged by wire drawing. This problem can be solved in two ways. First, by installing a small and a large valve in parallel and so connecting them that with an increasing load, when the small valve reaches its capacity, the large valve cuts in and the small one shuts off. On a decreasing load the operation is reversed. Second, by providing an auxiliary automatic or manual control valve in series with the main valve which will so control the pressure drop across the latter that the desired range of operating positions is maintained.

Present Trends

The comparatively recent practice of building large capacity, complicated combination refining units has necessitated thorough and adequate instrumentation. However, this does not mean that the instruments also should be complicated. On the contrary, it is desirable to use the simplest ones that are suitable for each application because "Rube Goldberg" installations, while theoretically sound, are seldom satisfactory, as no ordinary maintenance man can keep them working.

Furthermore, complicated interlocked systems place too many "eggs in one basket" and the failure of one link will cause a much more serious operating upset than if the instruments were independent. Trends in instrumentation do not necessarily *follow* improvements in process design. In fact, improved instruments have been, in several cases, the factor that led to the development of more satisfactory processes or parts of processes.

In flow measurement and control, the orifice meter is used almost exclusively. Air-operated controllers are used almost universally and the advent of remote transmission systems has greatly increased the flexibility in making installations. Control valves may be located in the discharge lines (or even suction, in some cases) of centrifugal pumps, on the governor valves of turbines or in the steam lines to reciprocating pumps.

For simple temperature indication, the dial type thermometer is being used increasingly, in place of laboratory and industrial thermometers. The greater initial cost of this instrument is compensated considerably by the greater readability of pressure gauge type dial and lower maintenance costs, particularly when vibration or shock must be contended with.

In gasoline plants, topping units, and other low and medium temperature plants, recording and controlling thermometers are widely used. In cracking and combination units, pyrometers are generally employed. The majority of installations utilize the flexibility of the thermocouple system to the fullest extent by providing one or more master indicators which, by a switching panel, may be used to indicate temperatures of lesser importance and also as a check on the important recorded temperatures. The maximum number of points to be recorded on a single instrument is a matter of opinion. During normal operation, a large number of records on a single chart may be easily followed. However, when a unit is being brought on stream or shut down or in the case of major upsets, the records will cross and recross so rapidly that it is difficult to follow them unless the number is fairly small.

The temperature controllers most commonly used are the air-operated thermometer and potentiometer types. The latter has gained in importance during the past few years because it is free from the thermometer tube system limitations in temperature range, over-range capacity and tubing length. In the case of larger units in which the decrease in production due to temperature upsets may cause appreciable economic loss, it is often found desirable to install an indicating thermometer or potentiometer controller and to record the controlled temperature entirely independently on a multipoint recording instrument. Thus failure of the recorder does not interrupt control and controller trouble may be repaired while the temperature is controlled manually in accordance with the recorded temperature.

Another interesting development has been made in connection with fractionating column reboiler outlet temperature control under conditions of variable pressure on the reboiler heating medium. Due to the time lag, an ordinary temperature controller was unsuitable, as it could not correct quickly enough for flow changes resulting from the pressure variations. However, by arranging the system so that a flow controller maintained a constant flow of heating medium, regardless of pressure fluctuations and connecting the temperature controller to reset the control point of the flow controller, satisfactory results were achieved. Furthermore, a simple manifolding of air lines permitted either instrument to operate the control valve directly, thus minimizing the upset in case one of them should be shut down for servicing.

Satisfactory automatic control of furnace coil outlet temperatures is a problem of long standing. Several types of instruments have been found satisfactory for simple units. For cracking units the perfection of the potentiometer type air-operated controller and other refinements have made good control an accomplished fact.

On large units nearly every type of liquid level measuring device previously described may be employed because the nature of each application usually eliminates all except one or two suitable types

Interior of United Pipe Line Co.'s boiler house at its pump station in the Cass County, Texas, side of the Rodessa field. The three boilers are of 300 hp. each, are fully insulated and operate at pressures varying from 250 to 270 pounds

Automatic control of level is usually reasonably simple, as most problems fall into one of two categories. In one class the level must be maintained within narrow limits and variations in flow rate of the draw-off are of no concern, so a simple quick-acting controller may be used. In the other case, the level may be allowed to vary considerably but the draw-off rate must be as constant as possible because the fluid drawn off is delivered as charge to other equipment. Under these circumstances the slow acting averaging type level controller is quite adaptable. Should an occasion present itself where both constant level and draw-off are essential, it is probable that no single existing instrument could be applied. However, it is possible that a flow controller could handle the draw-off and some other means be provided, such as intermediate reflux regulation, for level control.

Pressure measurement and control is another example of fairly straight-forward instrumentation. For simple problems where close control is unnecessary, the direct operated regulator is suitable. For more accurate control the pilot operated type is applicable. For very close control, especially if the flow variations are considerable or the time lag is appreciable, instrument type controllers are necessary.

Selection of Equipment

In order to properly select an instrument for a given application, it is essential that its proposed function be definitely established and that *all related process information* be assembled. These data should be sufficient to prepare adequate specifications and procure prices. Then by balancing the cost of the various proposals against the results obtainable, and the means employed, the decision can be made. The importance of full information on the process is emphasized because the lack of such information or failure to properly analyze it, are doubtless the major causes of misapplication of instruments.

Test Work

Tests are necessary in practically all phases of refinery work for the purpose of acceptance of equipment built under contract, improving operation, solving operating troubles, determining when heat exchangers are fouled or in bad order and procuring data for new or revamp designs. The results of tests are no better than the data. In other words, reams of computations and the resultant conclusions are worthless if the test data are not reasonably accurate. For this reason it behooves every test engineer never to slight the importance of assuring himself that his test equipment is properly installed and adjusted.

Probably one of the most abused test instruments is the plain ordinary unassuming mercury-in-glass laboratory thermometer. While it has a very definite and valuable function, it is not accurate under any and all conditions. Each thermometer is carefully and accurately calibrated in the factory for a given immersion at a given emergent stem temperature. The immersed portion is all at the same temperature and the depth of immersion is indicated by an etched mark on the stem. Since the majority of test work requires the measurement of temperatures by inserting thermometers or other temperature

measuring devices in wells or sockets installed in various sized lines, the immersion of thermometers and emergent stem temperatures are seldom the same as used in the original calibration. It is possible to correct for such differences by using an auxiliary thermometer and applying the method outlined in the A.S.M.E. power test codes.

This correction is usually negligible up to possibly 200 to 250° F. but above that point it becomes increasingly important with higher temperatures. Such a correction is rarely applied in plant test work and as a consequence considerable erroneous temperature data have resulted. Furthermore, if the temperatures are too high for the use of immersion oil or mercury in the wells, a further error is introduced because the usual well has a considerable mass which is outside the stream and unless very carefully insulated, the heat losses cause a considerable temperature differential along the immersed portion of the thermometer; whereas the calibration is for a *uniform* temperature. The author has attempted to develop a modification of the A.S.M.E. immersion correction formula to correct for this but the differential was found to vary too widely to obtain satisfactory results. However, there is a simple solution to this problem. Reliable temperatures from approximately atmospheric to the highest encountered in refinery practice can be obtained by the intelligent use of one or more calibrated thermocouples connected by short compensating lead wires to a good portable potentiometer provided with a cold junction thermometer. Handling this equipment is relatively simple and excellent results have been obtained.

The other important measurements involved in test work are flow and pressure and the major pitfalls have already been covered. In the case of flows which must be measured fairly frequently, such as for checking exchanger transfer coefficients, it is often economically preferable to make permanent installations, rather than to install equipment each time a test is required. The use of special instruments is occasionally involved, but a discussion is beyond the scope of this paper. Excellent references are Diederich and Andrae's "Experimental Mechanical Engineering" and the A.S.M.E. test codes.

Sound engineering and proper installation provide the first essentials but do not guarantee success. Intelligent maintenance, preferably under the direction of an engineer, is also necessary. Since inaccurate instruments are worse than none, it is obvious that fairly frequent checks should be made. A reasonable schedule is to check important temperatures with a test thermocouple and portable potentiometer, pressures with a portable test gauge, and all flow meters for zero and correct sealing, on a weekly or semimonthly basis. A complete check-up should be made approximately twice a year. However, even careful engineering, installation and maintenance do not complete the picture. Close cooperation between the operators and instrument maintenance men is also necessary.

In summary, it may be stated that successful measurement and control can be achieved only by careful planning and a lot of plain team-work.

Locating Water Source

(Continued from Page 66)

tying it into the casing and to the formation below the casing shoe. Where casing is set too high, this method has been used very successfully. In the Fitts pool in Oklahoma one well survey indicated water 18 feet below the casing shoe. By cementing in a blank stub liner the water was eliminated and production increased from less than 100 bbls. to over 2,000 bbls. per day.

Before doing any cement repair job in a well, care should be taken to make conditions as favorable as possible. The bottom-hole plug, which is the simplest to place, fails in many cases because proper care was not exercised to see that the bottom of the hole was clean and presented conditions under which the cement could set up thoroughly. Preliminary runs before conditioning on many water surveys have indicated that oily, completely opaque water has settled on bottom. Samples of this water have been taken in several wells and have been found to be very heavy with sand and oily substances. Any cement dumped in fluid of this kind would form only an emulsion, which could not be expected to have the strength necessary to exclude formation water under pressure. The fact that formation water usually is under considerable pressure makes the results somewhat dependent on the length of the plug and the formation in which it is placed. In one field in California with two zones open, both producing water, there was a difference in fluid levels of 3,000 feet when the zones were tested separately. Under conditions of this kind, with the water in one formation under much less pressure than the other, it is vital that the cement must be tied into some impervious formation.

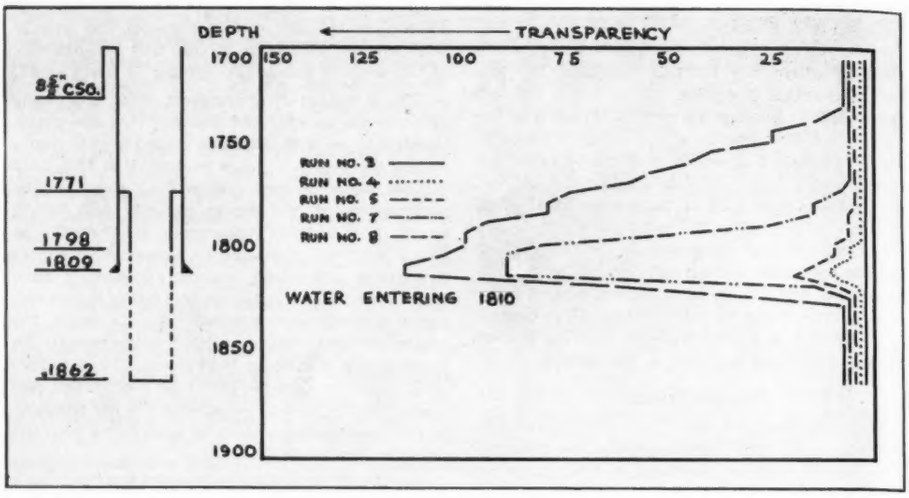

Fig. 3—A cement failure just below the shoe, probably caused by the casing being set too high, was detected in this survey. A blank stub liner, extending up into the casing and to solid formation below the shoe, is often cemented in to shut off water under these circumstances

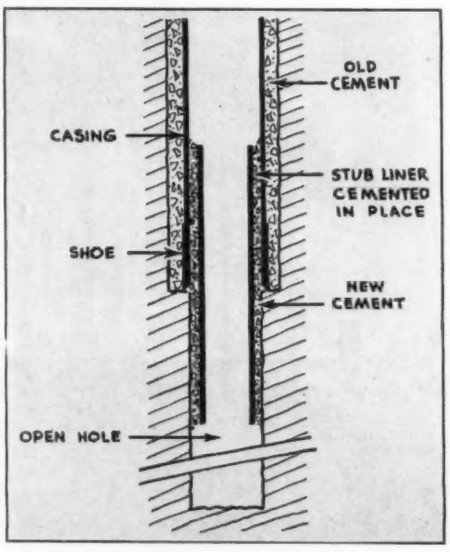

Fig. 4—Diagrammatic sketch showing the application of a blank stub liner to exclude formation water entering near the casing shoe

In order to shut off intermediate water sources by the use of the cemented-in blank section liners, or by cementing through perforations, the possibility of a successful job is greatly increased by having at hand accurate knowledge of the formations which will be contacted by the cement. A careful study of the electrical log and cores, if any were taken, should be made before any definite plan of repairs is formulated. Where blank section liners are run for the purpose of excluding water, to enlarge the hole at the point where the blank section is to be placed provides a larger annular space for a greater volume of cement and insures a complete body of cement around the casing. Before cementing through perforations, the use of a suction perforation washer to remove sand from the annular space around the casing enhances the probability that the cement will go through the perforations and reach the walls of the hole where it can effect a tight bond with the clean formation.

The photoelectric method of oil-well locating used to make the surveys shown in Figures 1, 2 and 3 operates by recording at the surface the relative translucency of the fluid in the well. Because formation water is translucent, its point of entrance can be readily detected by the better light-transmitting quality of the portion of the fluid column which has been diluted by the translucent formation water. Surveys are customarily made with the well bore full or partly full of slightly muddy fluid. A first run of the photoelectric instrument is made to determine the uniform opacity of the mud-conditioned fluid, then the level is reduced by gradual bailing, in order to allow formation water to enter. The photoelectric instrument is run periodically during the bailing process in order to catch the source of the water when it first becomes apparent to the sensitive photoelectric cell.

Once a suspected source of formation water is located, a number of runs are made in succession. The fluid at the suspected point is alternately examined as the instrument passes slowly downward, and stirred up by the rapid passage of the instrument upward. In this same manner any subsequently detected sources are examined. A water source can be determined even though it be but a few inches in length. The presence of oil in the well fluid does not interfere because the oil itself acts to retard the passage of light between the bulb in the instrument and the photoelectric cell and is diluted or dissipated by entering formation water in the same manner as is the mud commonly used as a conditioning agent.

QUESTIONS ON TECHNOLOGY

By Charles K. Francis, Ph.D., Technical Editor

Relative Properties Acid-Refined and Solvent-Refined Oils

The statement has been made that solvent refined oils do not stand up so well as acid refined lubricating oils. If this is true, can you furnish some comparison tests?—C. A.

Several years ago it was reported that certain lubricating oils that had been produced by special processes were the cause of bearing failures in a specific automobile. Since then the matter has been investigated in several laboratories. It was found that at high temperatures, above 300° F., and speeds exceeding 70 m.p.h. that there was a tendency for the bearing metal to flow out of place, but the corrosion was always low and not serious.

Fairlie examined oils of several sources and made by both acid treating and solvent methods. Slight increases in neutralization number, indicating acid formation, were detected when the oils were used. The number increased with rise of temperature. Fairlie stated: "While the quantities of acids, or acid-like substances, produced in these oils are very small, they are sufficient to show that no one class of oils can be selected as the source of the trouble."

Another investigation by Kalichevsky, Simpson and Story gives informative data on the subject. Comparisons of the properties of Mid-Continent and Pennsylvania motor oils are given in the table.

COMPARISON OF MOTOR OIL REFINING METHODS

	Mid-Continent S.A.E. 40		Penn. S.A.E. 20	
	Acid-refined	Solvent-refined	Filtered and dewaxed	Sol.-refined filtered and dewaxed
Gravity A.P.I.	25 7	28 8	28 4	31 1
Pour, °F.	20	0	5	0
Flash, °F.	430	460	430	430
Fire, °F.	490	520	485	480
Vis. @ 100° F.	770	660	373	294
Vis. @ 210° F.	73	73	57	55
V.I.	83	100	100	117
Carbon residue, per cent	0 9	0 2	0 6	0 3
Color (Lov.)	170	60	120	70
Sligh ox'dn. No.	17	0	4	0
Year	1932	1937	1932	1937

These properties indicate the progress made in the improvement of the quality of lubricating oils. Considerable reduction in both carbon residue and oxidation numbers.

Tests of acid-refined and solvent-refined oils for wear were made with a Timken machine. No appreciable differences were detected.

"Today, solvent-refined oils are recognized as products of premium quality, and are preferred by buyers to conventionally-refined oils of equal cost. In the early stages of their development, this was not always the case. For example, the introduction of the newer higher-strength bearing alloys brought with them cases of bearing corrosion which were at that time attributed to solvent-refined oils. These failures were afterwards traced to their source, being most frequently the result of engine operation at excessive crankcase temperatures which were set up at sustained road speeds above 70 m.p.h.

"As a matter of fact, careful research showed that typical solvent-refined oils were less prone to corrode bearings than the widely-accepted Pennsylvania oils which were conventionally refined. They were, however, more prone to cause corrosion than the coastal oils, which tended to form sludge rather than acids during oxidation.

References: M. Fairlie, The Laboratory Engine Testing of Motor Lubricants, The Oil and Gas Journal, March 19, 1936, p. 114. V. A. Kalichevsky, T. P. Simpson, and B. W. Story, Amer. Pet. Inst., Colorado Springs, Colo., June 2, 1937 (Preprint).

Definition of Petroleum

What is considered to be a good definition of petroleum? The several meanings that I have are not clear so I shall be glad if you will help me.—D. B. C.

The word petroleum is derived from the Latin words petra and oleum, meaning rock oil. This is the simplest definition. The industry uses the word alone, or crude petroleum and frequently simply crude oil, to mean the liquid mineral oil consisting essentially of carbon and hydrogen in the form of hydrocarbons. There are usually small quantities of nitrogen and sulfur present and there may be traces of many metals.

Gurwitsch - Moore, in Petroleum Technology, state: "Hydrocarbons form both quantitatively and qualitatively, by far the most important portion of petroleum, and it may be said that the object of the existing petroleum industry consists in the separation of certain groups of these hydrocarbons in as pure a state as possible."

The American Society for Testing Materials gives two definitions:

"Crude petroleum. A naturally occurring mixture, consisting predominantly of hydrocarbons, and/or of sulfur, nitrogen and/or oxygen derivatives of hydrocarbons, which is removed from the earth in liquid state or is capable of being so removed."

"Petroleum. Liquid bitumen occurring as such in nature."

References: Gurwitsch-Moore, Petroleum Technology, New Edition, 1932, page 13. A.S.T.M. Standards on Petroleum Products, 1937, pages 369 and 373.

CHEMICALS FOR THE PETROLEUM INDUSTRY

Ethylene Dichloride

Use—Solvent extraction lubricating oil. Dissolves oils, fats, waxes, gum.

Form—Colorless liquid.
Odor—Pleasant, suggesting chloroform.
Formula—CH_2Cl CH_2Cl.
Specific gravity—1.256.
Melting point, °F.—31 below zero.
Boiling point, °F.—183.

LIMITATIONS

Specific gravity	1.255-1.257
Boiling point, max. °F.	183
Purity, per cent min.	99
Acidity, per cent max. as HCl	0.001
Color, max.	trace yellow

Catalysts Suitable for Hydrogenation and Polymerization

What are the catalysts for hydrogenation and polymerization used in petroleum refining, also those for coal hydrogenation?—S. O.

The catalysts suitable for many chemical reactions, especially for the preparation of numerous organic compounds, such as nickel, palladium and platinum, are not adapted to hydrogenation or polymerization processes applied to oil or coal because of the sulfur, gums and asphaltic substances present. These act as poisons to render the catalyst useless. Massive catalysts are used for the hydrogenation of petroleum oils, usually in the form of pellets or irregular lumps, the catalyst being deposited on charcoal or other inert material. Among the very large number of catalysts mentioned in the literature as being suitable for the hydrogenation of oil, the most frequently mentioned are the metals, and compounds of, chromium, cobalt, iron, molybdenum, phosphorous, tungsten, manganese, zinc, aluminum, magnesium, nickel and sulfur.

Nash and Howes mention in Principles of Motor Fuel Preparation and Application, many hydrogenation catalysts. Reference is made to the investigations of King and Matthews of the hydrogenation of tar. Molybdic acid appeared to be the best and the addition of sulfur increased its hydrogenating power, the catalyst then being in the form of MoS_2, with H_2S present in the gas. A few examples are selected from those given. Oxide and carbonate of uranium; mixtures of organic acids and inorganic salts; composits of the type trioxides of molybdenum and chromium or molybdic, zinc and magnesium oxides; sulfides of heavy metals; oil soluble compounds with metals; massive, powdered, and metallic forms supported in the reaction chambers.

Polymerization within the petroleum industry, involves the formation of olefines, which are converted to liquids. This has been accomplished with and without catalysts. An early study of the polymerization of olefines with catalysts at high temperatures under pressure was that of Ipatieff and and Rutala. They worked with aluminum and zinc chlorides on ethylene. With zinc chloride under 70 atmospheres pressure polymerization proceeded at 270° C., the liquids being pentane, isopentane and higher paraffins, with some olefines of 6-9 carbon atoms. Freshly prepared aluminum chloride induced polymerization around 20° C., and extremely active at 200° C. Among the catalysts for the polymerization of ethylene mentioned are: Phosphoric acid, potassium dichromate or phosphate, copper borate, calcium pyrophosphate, anhydrides of certain acids such as boric anhydride or phosphorous pentoxide, and the metals copper, manganese, tin, chromium, and alloys including brass and bronze.

References: Nash and Howes, Principles of Motor Fuel Preparation, pages 485, etc. Ipatieff and Rutala, Ber. 46, 1748, 1913.

Questions on Petroleum Technology may be sent to Dr. Charles K. Francis, The Oil and Gas Journal, Tulsa, Okla. When a copy of the answer is desired postage should be enclosed.

PROBLEMS FROM READERS

Edited by L. G. E. Bignell

Has Cinnabar Been Found in Well Cuttings?

I will appreciate your answering the following questions.

1. Is all quicksilver, or mercury, produced from the vermilion rock commonly called "cinnabar"?

2. Is there any other name for this vermilion rock than cinnabar?

3. In examining the logs of oil wells drilled in Coastal Louisiana, has a similar producing formation such as cinnabar, or a formation that will produce quicksilver, ever been discovered?

4. What are the valuable mineral production possibilities from the liquids or brines found in Coastal Louisiana wells?—R. V. C.

Perhaps the simplest way to answer the first two questions of your letter is to quote from "Handbook for Prospectors" the following chapter:

"Cinnabar. Strictly speaking, cinnabar is the only compound of the metal worth considering; virtually the whole supply of the world is derived from it. Cinnabar is mercury sulfide and contains 86 per cent mercury and 14 per cent sulfur. It has a cochineal-red color, quite unmistakable. The streak is scarlet. It crystallizes in the third system, the rhombohedral of the hexagonal, also as acicular or needle-shaped crystals. Cinnabar may be cut somewhat easily with a knife. The hardness is 2 to 2.5, its fracture is uneven, and its specific gravity is 8. The luster inclines to be metallic when the mineral is of dark color.

"Although the appearance of cinnabar should be sufficient to distinguish it, many people confuse it with the following:

"1. Cuprite (copper), which gives a green color to a blowpipe flame.

"2. Hematite (iron), which contains no mercury, and is not so bright in color.

"3. Realgar (arsenic), which gives an odor of garlic when heated.

"4. Proustite (silver), which gives an odor of garlic when heated.

"5. Zincite (zinc), which has no mercury, and is usually found with franklinite in New Jersey.

"Other mercury minerals are meta-cinnabarite, also a sulfide, but grayish black with a black streak; calomel, the chloride; and the tellurides—coloradoite and kalgoorlite.

"Tests—Cinnabar is easily identified but a few simple tests may be given.

"1. If a rock containing metallic mercury be powdered and rubbed on a clean copper coin the coin will become silvered or amalgamated.

"2. If cinnabar be heated in the blowpipe flame the metal contained will volatilize and go off as fume.

3. If cinnabar be finely powdered, moistened with hydrochloric acid, and rubbed on a clean copper penny, the coin will be coated with mercury so that it looks like silver. (Note: A dirty copper coin can be cleaned by dipping it in nitric acid.)

"4. If the mineral be placed in a closed tube in a blowpipe flame a black coating or deposit forms, and if heated in an open tube globules of mercury and sulfur fumes are formed.

"5. The ore may be crushed fine and panned similarly to gold ore.

"6. If mercury is suspected and a dark mineral is present, break the sample to expose a fresh surface which might show the red sulfide.

"Occurrence—Quicksilver deposits may be found in rocks of any composition or age, including andesite, basalt, granite, limestone, rhyolite, sandstone, shale, and serpentine. It is considered that hot springs have been the means of carrying and depositing cinnabar, so these and districts where there are sulfur deposits should be prospected. Bitumen also exists in the vicinity. Quicksilver deposits do not persist to any great depth.

"Ore bodies may be in the form of fissure veins, reticulated veins (network), stockworks (number of small parallel veins), and impregnations.

"The Arizona, Nevada and Texas deposits are in arid country, as a rule some distance from rail.

"Nearly all the Californian deposits are either in, at, or near the contact of serpentine and dike rocks, such as rhyolite. Chromite is mined from some of this serpentine, also magnesite. This serpentine is reddish which indicates iron, and on it grows fairly abundant underbrush. Where the rock is pale blue or green, and soft, little growth is noticeable.

"The principal minerals associated with quicksilver ore (cinnabar) are quartz (common), pyrite (common), calcite (abundant), dolomite, serpentine, and marcasite. Free sulfur is found in some deposits, arsenical pyrite in others, and borax at others."

The third question can only be answered by someone who has had opportunity of examining cuttings from Coastal Louisiana wells giving special attention to mineralogy. We know of no one who has made such examinations.

Your fourth question is also too much involved to answer. It is suggested you submit brine sample to some laboratory for complete analysis.

Gas Well's Pressure Fluctuates

If I recall correctly there was an article in your Journal some months ago, which unfortunately we did not keep, relative to using caustic soda and aluminum in a well which yielded a temperature of about 270° F. and we are wondering if that treatment would apply to our problem.

We have a Trenton gas well, 3,100 feet deep, which was shot with 800 quarts of nitroglycerin in 1929. The present rock pressure is approximately 300 pounds. This fall after a four-month shutdown, the well has suddenly started to function erratically in that it will run along on the gauge chart at, say 8-inch and then jump to 24-inch, then back to 13-inch and to 9-inch four hours later and to 20-inch one hour later. There is absolutely no sign of any fluid in the hole and there never has been. The well has an open flow of about 300,000 feet. Our belief is that there is frost in the bottom of the hole, all surface connections having been carefully examined and no obstructions found. It seems to us this mixture mentioned in your article might possibly be applied here with the idea of creating a high temperature and dissipating the frost if that is the source of our trouble. A shot of 10 gallons of alcohol produced a temporary result.—A. B.

Replying to your letter we believe the item you refer to will be found on page 66 of The Oil and Gas Journal of April 29. It is headed "Heat Producing Chemicals to Remove Paraffin."

From the description you give of your well we do not understand why heating it would give any lasting results. You will note that this mixture of lye and aluminum powder would require 1 pound of chemicals to generate 700 B.t.u. which will raise the temperature of 1 bbl. of oil approximately 5° F.

To use this mixture of lye and aluminum it will be necessary to add water and this might increase rather than decrease your trouble, for you say this hole is now dry. However, if you believe there is frost or ice in the hole it would seem that there must be some moisture. It is, of course, possible to have water vapor mingled with the gas and this could freeze if the cooling effect of the expanding gas was enough to drop the temperature to around 32° F.

We find this Trenton lime is made up of thin beds of hard, brown-to-gray, nodular, fine-grained, dolomitic limestone, separated by thin bands of calcareous shale. This being the case it would be our suggestion that you have the hole acidized in the hope that the hydrochloric acid will enlarge the pores and permit free exit of the gas into the hole.

It is apparent from the action of the well that the free flow of gas into the hole is now impeded and pressure will build up and drop off because of this obstruction. If it is frost it would be difficult to introduce enough heat by chemical mixtures to do any lasting good but if a mechanical heater could be used the whole formation might be heated so that the gas could continue to flow for some time. There are electric heaters on the market that can raise the temperature of the formation and they could be equipped with thermostatic control so the temperature could be maintained as desired. Any good electric company should be able to rig up a heater and there are several manufacturers offering good cables for oil and gas well use which could be attached to the heating element and suspend it in the well.

Considering everything it would seem to us that the simplest thing to do would be to acidize this well. If that does not give relief the gas should be analyzed and a check made for water vapor. While we have never heard of gas hydrates forming in an open hole it might occur. This would be a problem for a natural gas engineer who could visit the well and secure full information.

It is hoped the above suggestions may be of some assistance but without much more detailed information it is hard to draw conclusions and our discussion is therefore quite informal. The real thing to do would be to consult with an engineer familiar with conditions.

Kindly refer me to articles describing methods of heating paraffin wells in an attempt to produce them. Have you any information on the "lye-aluminum" method?—W. H. E.

You are referred to the above question and answer also to Bulletin 348, U. S. Bureau of Mines, "Paraffin and Congealing-Oil Problems," by C. E. Reistle, Jr. Copy of this bulletin, which contains a lot of good information about paraffin in wells, can be secured for 55 cents by sending that sum to Superintendent, U. S. Government Printing Office, Washington, D. C.

Crude Oil and Refinery Summary for First Nine Months of 1937-1936

The daily average production of crude petroleum in September, 1937, was 3,666,000 bbls., according to the final report of the Bureau of Mines. This is 46,600 bbls. below August but 633,600 bbls., or 21 per cent, above September, 1936.

Daily average crude runs to stills rose to a new high mark of 3,450,000 bbls., or 55,000 bbls. above the August level. Increased runs can be explained by crude stocks, which changed from an increase in August to a decline (1,181,000 bbls.).

The indicated domestic demand for motor fuel in September, as in July and August, failed to reach the levels generally predicted; however, exports were so much higher than anticipated that total demand showed a 10 per cent gain over a year ago. The indicated domestic demand was 47,245,000 bbls., or 6.5 per cent above a year ago. Exports were 4,456,000 bbls., 79 per cent higher than a year ago.

United States Supply and Demand—Crude Oil (Bbls.)

Nine months—	Total supply	Total demand	Excess Demand	Excess Pct.	Domestic production	Imports	Indicated domestic demand‡	Exports	Stocks refinable crude Sept. 30
1937	976,189,000	954,631,000	*21,558,000	*2 3	955,957,000	20,232,000	905,798,000	48,833,000	309,742,000
Daily average	3,576,000	3,497,000	78,967	....	3,502,000	74,476	3,318,000	178,875	.....
1936	838,053,000	857,215,000	19,162,000	2 2	814,051,000	24,002,000	819,550,000	37,665,000	295,693,000
Daily average	3,070,000	3,140,000	70,190	....	2,982,000	87,919	3,002,000	137,967	.....
Increase, 1937	138,136,000	97,416,000	.....	....	141,906,000	†3,770,000	86,248,000	11,168,000	14,049,000
	16 5%	11.4%	.....	....	17.4%	†15.7%	10.5%	29 7%	4.8%

Supply and Demand—Refinery Products—Motor Fuels (Bbls.)

Nine months—	Total supply	Total demand	Excess Demand	Excess Pct.	Domestic production	Imports	Domestic demand	Exports	Stocks Sept. 30§
1937	423,709,000	419,714,000	*3,995,000	* 9	423,709,000	.....	391,276,000	28,438,000	71,658,000
Daily average	1,552,000	1,537,000	.....	....	1,552,000	.....	1,433,000	104,168	.....
1936	380,669,000	378,675,000	*1,994,000	* 5	380,669,000	.....	358,026,000	20,649,000	62,745,000
Daily average	1,394,000	1,387,000	.....	....	1,394,000	.....	1,311,000	75,637	.....
Increase, 1937	43,040,000	41,039,000	.....	....	43,040,000	.....	33,250,000	7,789,000	8,913,000
	11 3%	10 8%	.....	....	11.3%	.....	9.3%	37.7%	14.2%
Nine months—				**Kerosene**					
1937	47,892,000	44,686,000	*3,206,000	*7 2	47,892,000	.....	37,841,000	6,845,000	8,839,000
1936	41,082,000	40,781,000	*301,000	* 7	41,082,000	.....	36,018,000	4,763,000	8,217,000
Increase, 1937	6,810,000	3,905,000	.....	....	6,810,000	.....	1,823,000	2,082,000	622,000
	16 6%	9 6%	.....	....	16 6%	.....	5.1%	43 7%	7 6%
Nine months—				**Gas Oil, Distillate Fuels and Residual Fuel Oil¶**					
1937	366,562,000	358,363,000	*8,199,000	*2 3	347,654,000	18,908,000	324,660,000	33,703,000	115,217,000
1936	328,324,000	319,691,000	*8,633,000	*2 7	314,723,000	13,601,000	294,463,000	25,228,000	112,617,000
Increase, 1937	38,238,000	38,672,000	.....	....	32,931,000	5,307,000	30,197,000	8,475,000	2,600,000
	11 6%	12.1%	.....	....	10.5%	39 0%	10.3%	33.7%	2.3%
Nine months—				**Gas Oil and Distillate Fuels**					
1937	106,884,000	103,393,000	*3,491,000	*3 4	106,343,000	541,000	80,763,000	22,630,000	26,210,000
1936	92,342,000	84,401,000	*7,941,000	*9 4	92,308,000	34,000	69,459,000	14,942,000	27,871,000
Increase, 1937	14,542,000	18,992,000	.....	....	14,035,000	507,000	11,304,000	7,688,000	†1,661,000
	15.7%	22 5%	.....	....	15 2%	.....	16 3%	51.5%	†6 0%
Nine months—				**Residual Fuel Oils**					
1937	259,678,000	254,970,000	*4,708,000	*1.8	241,311,000	18,367,000	243,897,000	11,073,000	89,007,000
1936	235,982,000	235,290,000	*692,000	* .3	222,415,000	13,567,000	225,004,000	10,286,000	84,746,000
Increase, 1937	23,696,000	19,680,000	.....	....	18,896,000	4,800,000	18,893,000	787,000	4,261,000
	10 0%	8.4%	.....	....	8.5%	35.4%	8.4%	7.7%	5.0%
Nine months—				**Lubricating Oils**					
1937	26,217,000	26,159,000	*58,000	* 2	26,217,000	.....	17,876,000	8,283,000	6,542,000
1936	22,853,000	23,336,000	483,000	2 1	22,853,000	.....	17,006,000	6,330,000	6,544,000
Increase, 1937	3,364,000	2,823,000	.....	....	3,364,000	.....	870,000	1,953,000	†2,000
	14.7%	12.1%	.....	....	14 7%	.....	.5%	30 9%	† 03%
Nine months—				**Petroleum Wax (Lbs.)**					
1937	412,018,000	399,554,000	*12,464,000	*3 1	385,000,000	27,018,000	225,546,000	174,008,000	123,098,000
1936	358,242,000	359,558,000	1,316,000	.4	346,080,000	12,162,000	223,896,000	135,662,000	113,359,000
Increase, 1937	53,776,000	39,996,000	.....	....	38,920,000	14,856,000	1,650,000	38,346,000	9,739,000
	15.0%	11.1%	.....	....	11.2%	122 2%	.7%	28 3%	8.6%

*Excess supply. †Decrease. ‡Crude oil only. §Includes finished, unfinished refinery, gasoline and natural gasolines. ¶Gas oil and fuel oil equals gas oil and distillate fuels plus residual fuel oils. Note: Total supply equals domestic production plus imports. Total demand equals domestic demand plus exports. Data on demand for refined products are based on refinery shipments.

Crude Oil Run to Stills and Total All Oils (Bbls.)

Nine months—	Total imports§	Total exports§	Total crude to stills	Per cent yield gasoline‡	Nat. gasoline production	Total supply all oils*	Total demand all oils*	Stocks all oils Sept. 30
1937	43,950,000	127,656,000	880,439,000	46 88	35,610,000	1,037,745,000	997,552,000	558 839,000
Daily average	161,000	468,000	3,225,000	....	130,439	3,801,000	3,654,000	.....
1936	42,050,000	96,532,000	792,795,000	46 8	30,430,000	888,364,000	897,584,000	532.480,000
Daily average	154,000	354,000	2,904,000	....	111,465	3,254,000	3,288,000	.....
Increase, 1937	1,900,000	31,124,000	87,644,000	.....	5,180,000	149,381,000	99,968,000	26,359,000
	4 5%	32.2%	11 1%	.....	17.0%	16 8%	11.1%	5 0%

*Total all oils includes crude and refined products, natural gasoline and benzol. †Decrease. ‡Includes natural gasoline blended at refineries. §Includes crude oil and refinery products. In case of imports includes receipts in bond and for domestic use. All data based on Bureau of Mines reports.

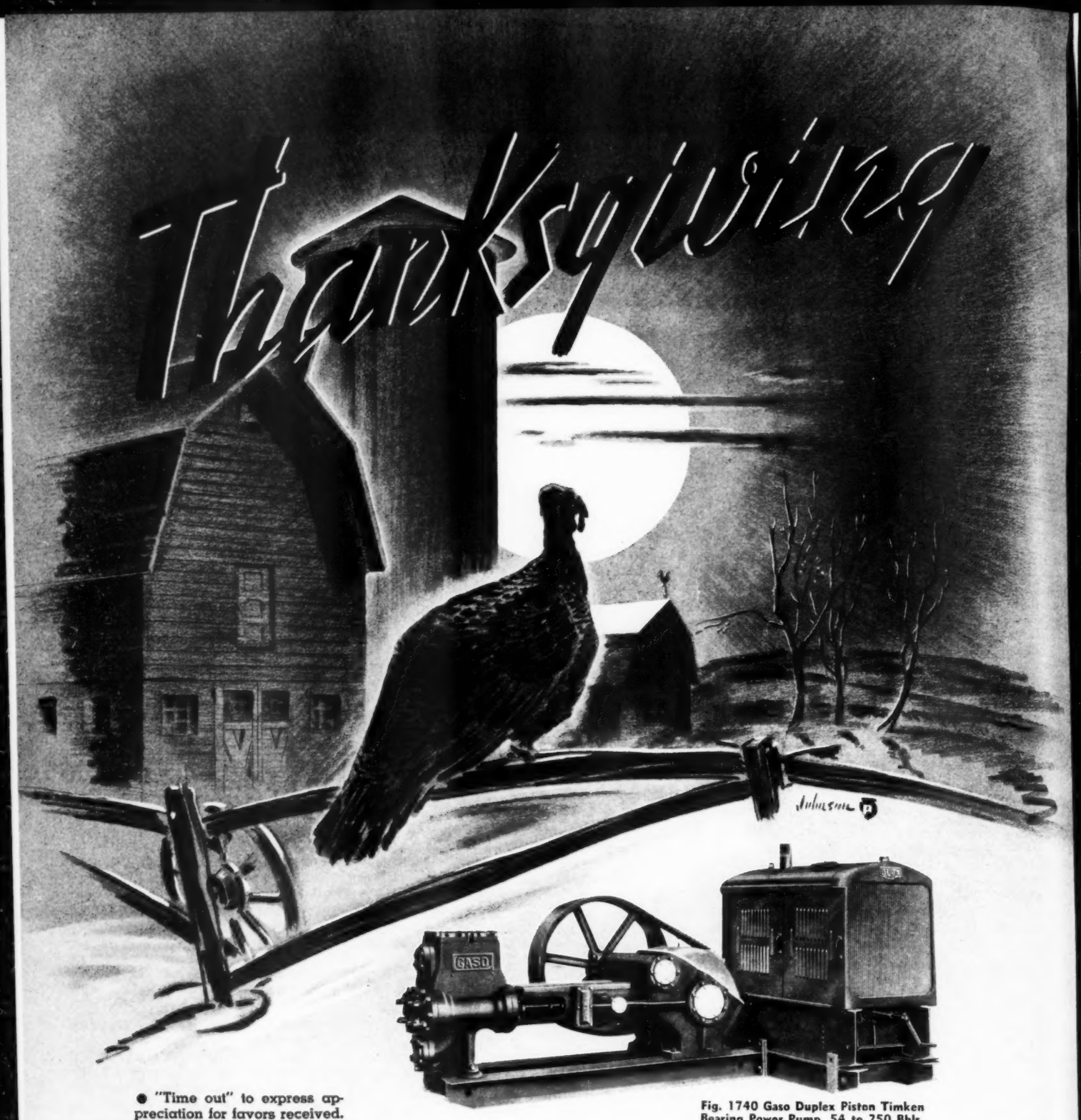

Fig. 1740 Gaso Duplex Piston Timken Bearing Power Pump, 54 to 250 Bbls.

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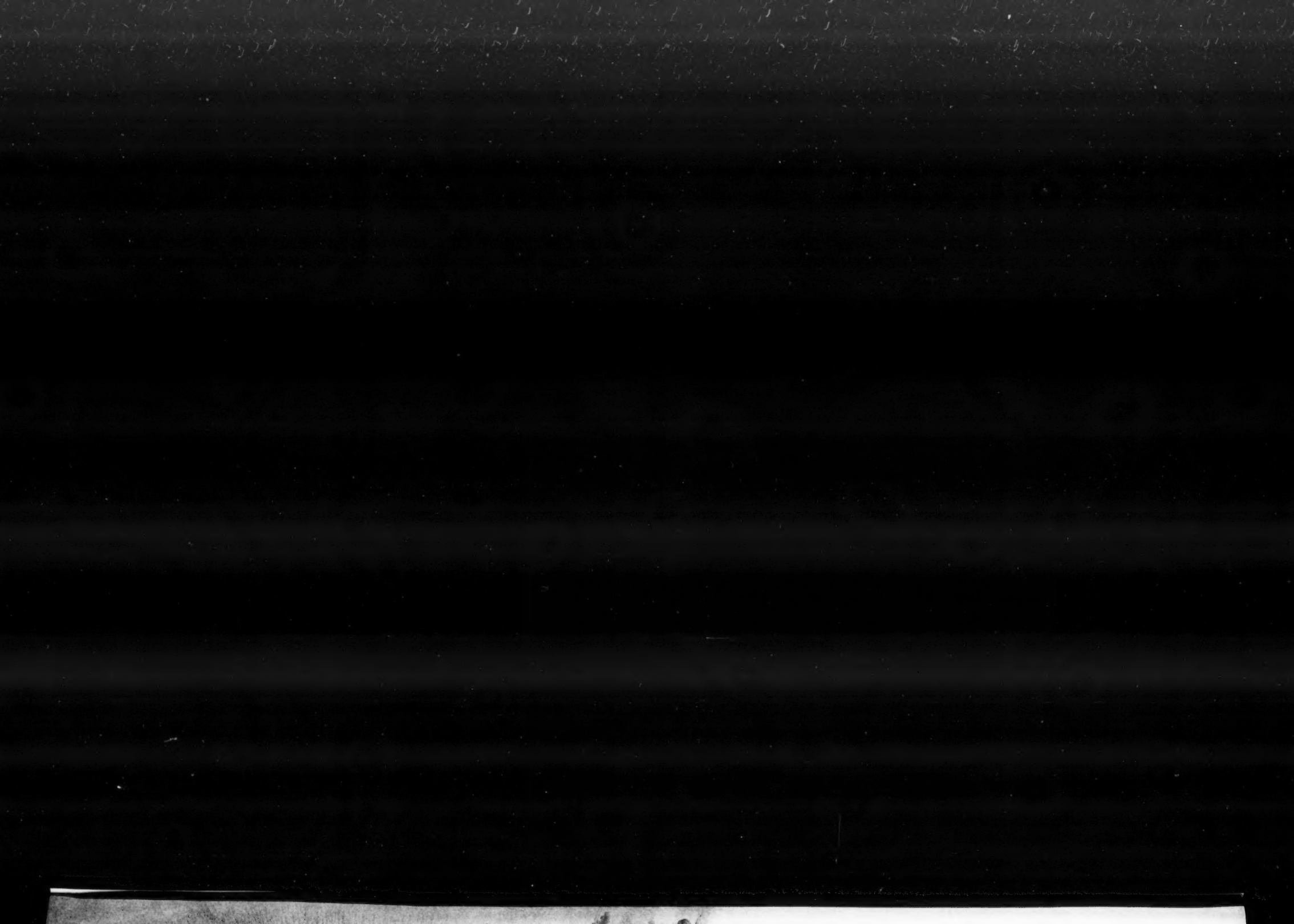


FIELD OPERATIONS

Summarizing the Week's Developments

Four wildcats were completed in Kansas, two opening new oil areas in northern Barton County, one in Greenwood County and one uncovering gas production in Grant County. A Ford County outpost had a showing of oil at 5,060 feet, and was drilling ahead in lime. A wildcat in section 2-30-4w, Sumner County, made potential of 378 bbls. of oil.

OKLAHOMA

A wildcat south of Calvin in Hughes County, Oklahoma, flowed 84 bbls. of oil in 14 hours from Cromwell sand, and may be deepened. An outpost west of Marlow, in Stephens County, was showing oil but operators were experiencing difficulty in completing it as a producer. A revival in activity was reported at Oklahoma City, where operators were seeking pay in shallow formations. A wildcat in section 23-15-5, Lincoln County, had oil showing in Hunton lime but was drilling ahead.

TEXAS

A new pool is in prospect in western Nueces County, Southwest Texas, where a 4,000-foot sand is showing oil, but not in large quantity. Seven new wildcat locations were made in West Texas. The recent Pecos discovery near Fort Stockton continues to look favorable. The Chalk field in Howard County was extended by a well flowing 27 bbls. an hour. The well may link the Chalk and Snyder pools. A new pool was opened 8 miles west of Cisco, Eastland County, the well starting at 901 bbls. a day from Ellenberger limestone. A 3,000-bbl. well was completed in the deep zone in the K.M.A., or Kemp City, field in Wichita County. Forty wells are drilling for the deep pay. The west side of the Sulphur Bluff field in Hopkins County was defined by a small well.

TEX-LA-ARK

The Lafitte field in Jefferson Parish, Louisiana, was extended by an 1,817-bbl. well. The second well in the Lake Long field in Lafourche Parish tested salt water at 9,539 feet. Lisbon operators in Claiborne Parish, Louisiana, continue to be handicapped by a short market for their crude. The Louisiana Department of Conservation orders the installation of meters on all oil movements into and out of Louisiana. The matter of Miller County, Arkansas, proration was postponed until December 1.

MICHIGAN

Eight completions were reported in the Buckeye field in Gladwin County, Michigan, and a number of new wells are due for completion this week. The area between the two Buckeye pools was extended south and west.

ILLINOIS

Dry holes in five wildcat districts in Central Illinois marred the record of the basin, but operators there expected that before the looked-for flock of pools materialized in the big area many disappointments would be suffered.

Completions in All Fields

(Week Ending November 13, 1937)

	Oil	Gas	Dry	Total	1937 total comp. to date	1936 total comp. to date
N. Y., Pa., W. Va.	72	29	7	108	3,967	3,500
Ohio	10	18	11	39	1,073	701
Indiana	0	0	0	0	105	166
Kentucky	8	3	8	19	619	277
Illinois	7	6	7	14	245	35
Michigan	13	0	6	19	706	729
Kansas	49	5	16	70	2,324	1,478
Oklahoma	26	2	12	40	2,338	2,294
Texas:						
North Central Texas	22	0	14	36	2,434	2,416
West Texas	47	0	2	49	2,343	1,409
Texas Panhandle	14	4	0	18	701	581
East Texas	57	0	2	59	2,097	2,266
East Central Texas	11	1	2	14	640	337
East Texas Border	3	0	0	3	298	138
Gulf Coast Texas	27	2	4	33	1,364	1,105
Southwest Texas	31	1	9	41	2,841	2,568
Total Texas	212	8	33	253	12,718	10,820
North Louisiana	6	3	0	9	573	598
Gulf Coast Louisiana	5	0	5	10	396	359
Total Louisiana	11	3	5	19	969	957
Arkansas	2	0	0	2	151	77
Montana	5	1	3	9	205	219
Wyoming	2	1	0	3	96	107
Colorado	0	0	1	1	18	26
New Mexico	12	0	0	12	621	499
Utah	0	0	0	0	3	5
California	16	0	6	22	1,311	1,004
Total United States	445	70	115	630	27,469	22,894
Total previous week	454	54	139	647		
Difference	9	16	24	17		

Outstanding Fields—Highlights

(Week Ending November 13, 1937)

FIELD—	Rigs up	Wells drlg.	Weekly oil completions	Initial prod.	Total No. oil wells	Daily av. prod.
TEXAS						
Hastings	8	19	13	6,555	379	20,887
McCampbell	3	12	3	230	81	4,350
Saxet	15	16	1	195	571	43,880
Benavides	4	11	2	305	94	5,100
East Texas	47	138	57	2,495	23,932	485,748
Talco	8	25	8	2,135	548	35,650
Ector County	21	107	11	11,567	718	28,900
Winkler County	9	42	6	4,190	1,488	43,100
OKLAHOMA						
Fitts	4	19	3	1,312	912	79,425
Billings	0	5	2	3,308	56	7,425
KANSAS						
Ellis County	6	29	7	14,984	246	7,980
Barton County	13	42	11	15,327	270	12,955
Russell County	12	34	8	7,702	933	34,860
Rice County	11	52	7	3,202	1,022	41,240
NEW MEXICO						
Lea County	15	109	9	1,213	1,524	96,730
LA-ARK-TEX						
Rodessa, Ark.	0	22	2	480	40	13,121
Rodessa, La.	2	12	2	2,350	421	43,146
Rodessa, Tex.	0	19	3	438	365	26,277
Lisbon, La.	2	12	2	1,015	139	2,812
Jennings, La.	1	15	1	388	74	11,227
MICHIGAN						
Buckeye	6	59	8	3,452	287	26,874
CALIFORNIA						
Wilmington	6	22	3	1,150	297	60,550
ILLINOIS						
Central Illinois	40	109	7	2,056	190	17,985

Eastern Field Report

By STAFF CORRESPONDENT

WEST VIRGINIA'S RESERVES OF GAS ARE GIVEN INCREASE

PITTSBURGH, Pa., Nov. 15.—Several completions during the week in the Oriskany gas field in Kanawha County, West Virginia, added over 60,000,000 feet a day to reserves. All of it was in the Coopers Creek field north of Grapevine Creek and the largest wells in the vicinity of Sissonville. This field is now the largest development in the lower eastern fields with a tremendous gas potential which will be greatly enhanced with the completion of the 70 wells now drilling. No northern limits have as yet been determined.

SOUTHEAST OHIO

The largest well for the week in southeast Ohio was the second test of J. P. Gordan and others on the Tom S. Morgan farm, section 13, Fallsbury Township. At a total depth of 3,103 feet it produced 110 bbls. the first day after a shot in Clinton sand.

In Muskingum County, Pure Oil Co. on the Angie Frazier farm in section 6, Jackson Township, has a good showing in the Clinton at 3,275 feet. It is making 50 bbls. a day along with 160,000 feet of gas. It is at least a mile from production.

In Athens County, Kachelmacher Estate completed a gas well on the Valley Mining Co. lease in section 16, York Township, in Berea sand at 959 feet. It gauged 168,000 feet a day.

In Holmes County, S. J. Ball and others completed a small gas well in the Clifford Craig No. 2, Lot 10, Mechanic Township, in Berea sand at 924 feet.

In Knox County, Pure Oil Co. No. 2 Donna M. Miller, section 10, Jackson Township, is drilling in the Clinton said at 3,139 feet and showing 15 bbls. a day before shot.

In Licking County, Park National Bank of Newark Account No. 10 completed No. 2 Harry Gleckner, Lot 1, Newton Township, through the Berea sand to 784 feet and it was a dry hole.

In Medina County, R. C. Grim and others completed No. 3 B. E. Grim, Tract 4, Lot 1, Chatham Township, in Berea Grit at 450 feet. It is good for 1 bbl. a day.

In Monroe County, T. E. Drum and others completed No. 2 N. M. Leasure in section 16, Franklin Township, in Injun sand at 1,480 feet. It is good for 2 bbls. a day after shot. In Washington Township, F. S. English and others drilled No. 4 C. E. English through the Berea Grit to 2,135 feet. It gauged 100,000 feet of gas a day.

In Morgan County, the Ohio Fuel Gas Co. completed No. 4 N. M. Good, Fraction 34, Marion Township, in Second Berea at 1,655 feet. It gauged 103,000 feet of gas a day. In section 13, Marion Township, W. H. Harris completed a test on the Brower Carpenter farm 2 miles south of Chester Hill in a stray over the Salt sand at 1,120 feet. It is a small gas well.

In Noble County, C. W. Rich and others completed a test on the Bank of Buffalo, Ohio, lease in the northwest quarter of section 24, Buffalo Township, in the Berea Grit at 1,530 feet. It is a gas well gauging 100,000 feet a day and no oil showing.

In Perry County, E. O. Sloan and others drilled a test on the R. McCleary farm in the southwest quarter of section 18, Reading Township, through the Berea sand to 864 feet and it was dry.

In Washington County, 3 miles east of Barlow, section 7, Barlow Township, Ray Dewitt and others drilled No. 5 Munn Fisher to 845 feet and it was dry. One mile south of Dale, section 26, Wesley Township, H. B. Walker & Co. drilled No. 45 John Sheets through the Mercer sand to 150 feet and it was dry. On the Muskingum River, Muskingum Township, Charles Vaughn drilled a No. 7 through the Macksburg 500-foot sand to 726 feet and it was dry. On Archers Fork, section 28, Independence Township, J. O. Herlan and others drilled No. 3 H. J. Lynch Estate through the second Cow Run to 1,259 feet and it is also dry.

SOUTHWEST PENNSYLVANIA

Three gas wells and one small producer were completed during the week in southwest Pennsylvania. In Aleppo Township, Greene County, Union Gasoline & Oil Corp. drilled No. 5 T. M. Gallentine to 3,493 feet and it is a small producer. The Fourth sand was at 3,398-3,405 feet with oil at 3,400 feet; Fifth sand 3,464-3,472 feet with oil at 3,466 feet. It is showing for about 4 bbls. a week before shot.

In Morgan Township, Greene County, Equitable Gas Co. deepened No. 1558 Abijiah Ross from 2,453 feet to 2,826 feet, the Bayard sand, and it is good for 652,000 feet a day.

In Amwell Township, Washington County, Union Gasoline & Oil Corp. completed No. 8 A. O. Vankirk at 2,660 feet. Gantz sand was at 2,638 feet with 739,000 feet of gas at 2,649-2,656 feet, which blew down to 512,000 feet a day.

In Morris Township, Washington County, Duquesne Gas Co. completed No. 8 Carter Heirs at 2,995 feet. Thirty-Foot sand was at 2,945-80 feet with a total gas of 147,000 feet a day.

Allegheny County

In Ross Township, Allegheny County, Alex Wally and others are drilling on the Ward farm. In Franklin Township, Hankey & Co. have reached 1,200 feet on the George Cupps farm. Charles B. Wachter is down 300 feet on the William Hoffman farm and 1,000 feet on the J. E. McNanny farm.

In Robinson Township, Allegheny County, Getty & Purdy were drilling at 200 feet on the R. Bennett farm. In Beaver County, South Penn Oil Co. is down 900 feet in No. 18 William Taylor, Greene Township.

Greene County

In Morris Township, Greene County, William Smith and others have reached 2,670 feet on the Fonner Heirs. In Washington Township, Equitable Gas Co. is drilling at 2,000 feet on the Pratt Yeager farm.

In Center Township, Carnegie Natural Gas Co. is underreaming 6¾-inch casing in No. 3 J. W. Milliken, and have reached 2,264 feet. The Rutan Oil Co. is down 2,070 feet in No. 4 Charles T. Harvey. Charles Mong and others are drilling at 1,650 feet in No. 2 J. L. Metz.

In Richhill Township, Manufacturers Light & Heat Co. will deepen No. 1 Albert Lyons. Smith McCracken is drilling at 2,070 feet on the Asa Hughes farm. In Dunkard Township, Convex Glass Co. is shut down after testing the Fourth sand gas at 2,400-39 feet. It gauged 200,000 feet a day.

In Springhill Township, J. H. McNichols & Co. started drilling No. 3 J. W. McNichols. The Taylor Oil & Gas Trust is waiting for 10-inch casing at No. 5 John Taylor, total depth 850 feet. The South West Penna Gas Co. is fishing at 1,300 feet for the tools in No. 3 Thomas Smith. In Aleppo Township, Cochran & Cochran are fishing for tools at 1,625 feet in No. 4 John Strope.

In Wayne Township, Equitable Gas Co. is drilling at 1,410 feet at No. 4 S. C. Brock. The Manufacturers Light & Heat Co. is drilling at 1,760 feet in the J. N. Johnson test. Eddy & Johnson are ready to spud No. 2 E. Maple.

Fayette County

In Fayette County, Franklin Township, Greensboro Gas Co. has a location on the John Ban farm. In Menallen Township, Fayette County Gas Co. made a location on the Melvin H. Bryson farm.

Washington County

In Amwell Township, Carnegie Natural Gas Co. has rigged up the test on the F. M. Closser farm and is building the rig on the P. W. Reynolds farm. Their No. 4 N. B. Redd is drilling at 2,375 feet with the Big Injun sand at 1,926-2,175 feet.

In South Franklin Township, Dunn Mar Oil & Gas Co. is down 2,750 feet at No. 4 J. T. Baldwin; Carnegie Natural Gas Co. drilling at 1,874 feet on the No. 3 Alberta Iams with the Big Injun sand topped at 1,871 feet; F. K. Fawcett and others, starting to drill No. 2 Clarissa Ramsey. The South Penn Oil Co. is building the rig for No. 3 Piedmont Coal.

In South Strabane Township, Penn Ohio Oil & Gas Co. is down 3,050 feet at No. 2 Porter Brothers; in North Strabane Township, Keystone Gas Co., drilling on the H. W. Davidson farm, and at 2,300 feet on the Beabout farm.

Deep Tests

In Washington County, the test of Norwood P. Johnston and others on the James McBurney farm in Mount Pleasant Township is drilling at 6,547 feet or 72 feet in the Onondaga. Drilling has been slow due to the amount of hard chert.

In Allegheny County, the test of the South Penn Oil Co. on the Christian Z. Schove farm in Hampton Township, is still fishing at 6,238 feet. In Beaver County, the test of John T. Galey and others on the James Tennis farm in South Beaver Township is drilling at 3,400 feet and the test of the T. W. Phillips Gas & Oil Co. is down 2,200 feet on the James Smith farm.

In Fayette County, Potter Development Co., William E. Snee and others are drilling at 3,200 feet in No. 2 Summit Hotel, Chestnut Ridge in South Union Township.

WEST VIRGINIA

Three small producers were completed in West Virginia. In Roane County, the Henderson Oil Co. completed No. 8 F. H. Bee, Jr., in Curtis district, in the Salt sand at 1,708 feet and it is good for 10 bbls. a day.

In Ritchie County, Clem S. Morris completed the E. C. Wrick test in Murphy district at 1,878 feet, Big lime and it is good for three-fourths barrel a day. with 17,000 feet of gas. In Grant district, Howard McBride and others completed the Curtis Mitchell test in the Big Injun sand at 1,898 feet and it is good for 2 bbls. a day.

Gas Wells

In Boone County, Owens Illinois Glass Co. completed No. 28 Cassingham Coal Land Co., in Washington district, as a gas well gauging 440,000 feet a day 35 hours after a shot. Berea lay at 2,299-2,326 feet with gas at 2,303-11 feet. In Scott district, this company completed No. 23 Allen and Pryor at 2,349 feet. Berea lay at 2,311-21 feet. Lime gas gauged 47,000 feet a day and Berea gas 78,000 feet a day.

In Cabell County, Sue Gas Co. No. 6 Fraley in McComas district was completed at 1,887 feet. It gauged 260,000 feet a day 30 minutes after shot. In this district, Fairfax Gas Co. deepened No. 2 Leonard Paugh from 1,639 feet to 3,765 feet. The Berea was at 2,182-95 feet; brown shale 2,820-3,640 feet with the top of the Corniferous lime at 3,640 feet. It gauged 360,000 feet 16 hours after shot.

In Kanawha County, Pure Oil Co. completed No. 277 William Coal in Cabin Creek district at 2,917 feet. Berea sand was at 2,870-2,913 feet and gas gauging 323,247 feet came from that formation.

In Lincoln County, Guyan Gas Co. No. 3 J. W. Jeffers in Sheridan district was good for 53,000 feet per day at 3,333 feet. In Carroll district Three H Gas Co. deepened No. 1 J. W. Roberts from 1,988 feet through the brown shale to 3,315 feet and it is good for 37,300 feet of gas after shot. In Jefferson district, Rich Fork Gas Co. deepened No. 1 Croft Land Co.

(Continued on Page 96)

Oklahoma Operations

By
DAL DALRYMPLE

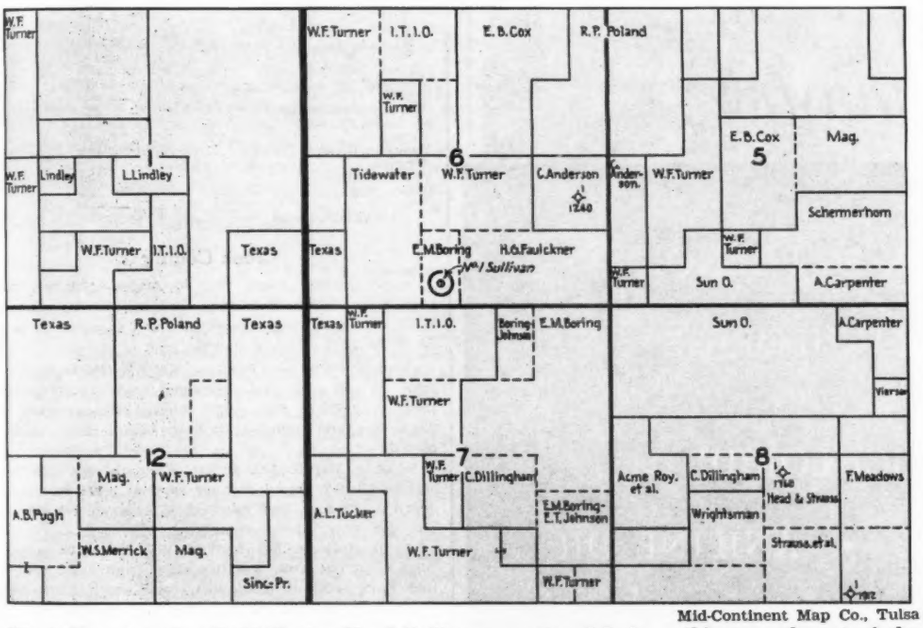
HUGHES OUTPOST FLOWING; INCREASE IN CAPITAL WORK

The Hughes County wildcat being drilled by Phillips Petroleum Co. at No. 1 Beeker, NE NW SW section 8-5-10, pool opener south of Calvin, held major interest in Oklahoma field activity the past week. It flowed 84 bbls. of high gravity oil in the first 14 hours of a 24-hour test at the week-end, with gas production estimated as high as 20,000,000 feet. Production was from Cromwell sand topped at 4,398 feet, total depth 4,455 feet. Operators were expected to deepen, possibly to Wilcox sand. A considerable royalty play in the Calvin district has been under way since the wildcat first showed for production.

Olson Drilling Co. and Ed Parson continued their efforts to make a producer of the No. 1 Blake, SW SW NW section 22-2n-8w, wildcat west of Marlow in Stephens County. It had a good showing of oil with some salt water on drill stem test at 5,554 feet, total depth, and operators were running a Schlumberger survey. Oil sand was cored at 5,531-46 feet and, with packer set at Hunton lime. Water intruded at 3,317 feet and the hole was plugged back.

The Oklahoma City area, quiescent since the Wilcox sand boom in the Capitol area subsided several months ago, is giving signs of new life as operators seek Dolomite production at the north end of the field and shallower pays in the south part of the field. Two wells on the northwest side of the Capitol zone showed for Dolomite producers during the week, and several other wells in the area were drilling or getting ready to start operations. This new play is in the SW and NE of section 15-12-3w, northwest edge of the field. In the south and older sector of the field, Indian Territory Illuminating Oil Co. was due to start work at No. 4 Fuzzell, SW SW NW section 19-11-2w, and No. 8 Bodine, NE NE SE section 24-11-3w, by November 19. They will seek pay in the Pawhuska formation around 3,100 feet.

The Bureau of Mines estimated the December market demand for Oklahoma crude oil at 588,800 bbls. daily,



Mid-Continent Map Co., Tulsa

Work has started at E. M. Boring No. 1 Sullivan, section 6-5s-1e, wildcat northwest of the Brock pool in southern Carter County

5,521 feet, recovered 600 feet of mud and oil in 15 minutes, with gas showing but no water.

Northwest of Marlow and in Stephens County, Coline Oil Co. No. 1 Johnson, SW SE NE section 1-2n-8w, was shot with nitroglycerin near plugged-back depth of 9,060 feet and was due to test.

A wildcat in Lincoln County gave promise of possible production in Hunton lime during the week. It was C. L. Carlock and others No. 1 Young, C N half NW NW section 23-15-5, south of Kendrick. It had 19 feet of saturation in Hunton lime found at 4,298-4,350 feet. It topped Viola lime at 4,415 feet, Dolomite 4,455 feet and was coring below 4,465 feet in Dolomite. If it is not productive in Wilcox sand operators are expected to test the Hunton lime showing.

Stanolind Oil & Gas Co. and associates No. 1 Salina, SE NE NW section 4-5n-6e, wildcat south of Konawa in southern Seminole County, which has been testing since August, was running tubing and rods, preparatory to pumping. It swabbed at the rate of 5 bbls. of oil an hour through perforations in casing at 3,024-40 feet in a reduction of 9,200 bbls. from the November estimate of 598,000 bbls., but above the November state allowable of 575,000 bbls.

Wildcat Completions

Three wildcat failures were recorded in Oklahoma the past week. In northwestern Lincoln County, Riley & Talbot and others No. 1 Weidler, NW SW NW section 20-17-2e, found second Wilcox sand at 5,010 feet and was dry and abandoned at 5,026 feet, total depth.

F. W. Merrick, Inc., No. 1 Robinson, NE cor. section 33-7s-4e, southwestern Marshall County, topped lime at 2,530 feet and was dry and abandoned in shale and lime shells at 2,557 feet, total depth.

H. R. Emmerson No. 1 Haynie, NW SE NE NE section 23-8s-5e, in ex~me southern Marshall County, had Arbuckle lime at 774 feet and was dry and abandoned at 810 feet, total depth, in lime and shale.

Pontotoc County

Magnolia Petroleum Co. No. 26 Simpson, NE cor. section 29-2n-7, Fitts district, Pontotoc County, flowed 220 bbls. of oil from Cromwell sand in 24 hours and was completed at total depth of 2,642 feet.

Same company's No. 25 Simpson, SE SE NE section 29-2n-7, had lower McAllister sand at 1,143 feet, total depth 1,550 feet, perforated liner and produced 5,000,000 feet of gas, completed.

E. H. Moore No. 2 Frazier, SE NW NW section 23-2n-7, an old well, was deepened from 3,949 feet to 4,140 feet, pumped 12 bbls. of oil and 85 per cent salt water and was recompleted. Hunton lime was topped at 3,934 feet.

Magnolia Petroleum Co. No. 2 Young, NE NE NW section 22-2n-7, topped Hunton lime at 3,932 feet, total depth 3,936 feet, ran 2½-inch tubing to 3,839 feet, was bottomed at 3,936 feet and made potential of 829 bbls of oil, with 819,000 feet of gas.

Crusaders Petroleum, Inc., had the biggest Fitts completion of the week at No. 1-A Smith, NW SE NE section 31-2n-7, which had Wilcox sand at 4,368 feet and was completed at 4,400 feet, total depth. It flowed 263 bbls. of oil in three hours through tubing and made potential of 2,055 bbls.

E. H. Moore No. 1-A Muse, SW NE SE section 33-2n-7, was a temporarily abandoned location.

Magnolia Petroleum Co. No. 4 Simpson, NW SE NE section 29-2-7, an old well, was plugged back from 4,280 feet to 4,190 feet, pumped 71 bbls. of oil in 16 hours and was recompleted.

Vierson Oil & Gas Co. No. 1 Cynda, SE NE SW section 25-5-7, had Gilcrease sand at 2,252 feet, total depth 2,570 feet, and flowed 112 bbls. of oil in 24 hours, completed.

New work in Pontotoc County: Mary F. Oil Co. and W. A. Delaney No. 1-A Harris, NW SE SE section 29-5-8, spudded; Fleet & Osborn No. 1 Hatty, SW SW NE section 25-5-7, location; Carter Oil Co. No. 1 Madeline, C W half SW NW section 1-1n-7, location; M. C. Mitchell No. 1 Brown, NE SE SE section 33-2n-7, location.

Noble County

Two large producers and a failure were completed in the Billings pool, Noble County. Largest of the producers was Continental Oil Co. No. 12 Conway, SW SE SW section 16-23-2w, on the west side of the pool. It found Wilcox sand at 4,266 feet, was bottomed at 4,293 feet and flowed 1,995 bbls. of oil in the first five hours. On potential test, it flowed 1,030 bbls. of oil in six hours, making potential of 4,161 bbls. of oil, with 4,850,000 feet of gas.

Lincoln Petroleum Co. and others No. 3-A O'Neil, SE NW SE section 16-23-2w, on the north side, found Wilcox sand at 4,264 feet, total depth 4,274 feet. It flowed 1,313 bbls. of oil in four hours and later, on potential test, flowed 971 bbls. in six hours, making potential of 3,735 bbls. of oil. Gas gauged 3,400,000 feet.

Tide Water Associated Oil Co. No. 1-A Derr, SE SE NW section 16-23-2w, outpost on the north edge of the field, was abandoned when it was bailed at the rate of seven bailers of salt water an hour after plugging back to 4,345 feet. Wilcox sand was topped at 4,324 feet, and the hole was bottomed at 4,545 feet in hard, tight sand.

Logan County

Eason Oil Co. No. 2 Smith, NW cor. section 13-17-1w, Langston area, Logan County, found Wilcox sand at 5,080 feet, total depth 5,119 feet, was shot and flowed 321 bbls. of oil in six hours, making potential of 1,057 bbls. Gas volume was 1,200,000 feet.

Amerada Petroleum Corp. and Stanolind Oil & Gas Co. No. 3 Fouts, NE cor. section 14-17-1w, flowed 198 bbls. of oil in six hours after a shot and made potential of 448 bbls. of oil, with 990,000 feet of gas.

Top of Wilcox sand was 5,082 feet, total depth 5,140 feet.

Seminole County

Malarnee & Shelton No. 5 Flowers, SE SW SE section 29-7-6, Dora pool, Seminole County, was completed as a Boggy sand producer at 2,945 feet, total depth, in sand. It swabbed 40 bbls. of oil in 16 hours, was shot and flowed 230 bbls. of oil in 24 hours.

Indian Territory Illuminating Oil Co. No. 1 Harjo, SE cor. section 23-9-6, an old well, was plugged back from 4,147 feet to 3,764 feet, was shot, pumped 22 bbls. of oil daily and recompleted.

Paul Traugh No. 5 Scroggins, SW NW SE section 26-6-6, was drilling at 1,020 feet.

Pottawatomie County

Magnolia Petroleum Co. No. 2 Green, NE SW NW section 13-7-4, an old well in the St. Louis district, Pottawatomie County, flowed 85 bbls. of oil in 24 hours after a shot and recompleted at 3,511 feet.

Same company's No. 3 Banta, NE NE SE section 14-7-4, an old well, was plugged back from 4,354 feet to 3,937 feet, was shot, pumped 80 bbls. of oil in 24 hours and recompleted.

Same company's No. 2 Brister, NW SW NE section 27-7-4, an old well, pumped 9 bbls. of oil daily after a shot and was recompleted after plugging back to 3,962 feet from 4,150 feet, total depth.

New work in Pottawatomie County: Clem Davis and others No. 1 Jordon, SW SE SW section 12-7-4e, building rig; Denver Producing & Refining Co. No. 4-A Risenhoover, NE SE NE section 14-7-4, rigging up rotary; Newt Bennett No. 1-A well, SE SW NE section 10-7-4, rig on ground; Stanolind Oil & Gas Co. and others No. 5 Rushing, SE NW SE section 32-11-4, building rig.

Tulsa County

Somerset Oil Co. No. 2 Withers A, C S half SW SW section 25-17-12, Tulsa County, found Wilcox sand at 2,343 feet, had a hole full of water at 2,346 feet, total depth, and was abandoned.

Moore & Gilbert No. 1 Camp, NW SW SW section 10-19-10, had Layton sand at 872 feet, total depth 895 feet, and pumped 15 bbls. of oil daily. Gravity of the oil was 38 degrees.

Johnson Oil Refining Co. No. 1 Bazwell, SE SW SW section 31-19-10, found Red Fork sand at 2,235 feet, total depth 2,681 feet in Mississippi lime, plugged back to 2,300 feet, was shot and pumped 10 bbls. of oil and 2 bbls. of water daily.

Estimated Daily Production

Estimated daily production of Oklahoma for the week ending November 13 and for the preceding week was as follows:

	Barrels	
	Nov. 13	Nov. 6
Allen	5,525	5,500
Billings	7,425	7,900
Burbank	7,900	7,900
South Burbank	14,200	14,250
Balance Osage	20,250	20,500
Blackwell district	5,025	5,050
Bristow-Slick	7,225	7,225
Chandler	2,875	2,850
Crescent	8,150	7,825
Cromwell	3,450	3,450
Cushing-Shamrock	11,125	11,100
Duncan district	3,975	3,950
Edmond	12,300	12,000
Fish	5,450	5,350
Fitts	79,425	69,650
Jesse	3,650	2,875
Graham	4,425	4,400
Gray	1,325	1,325
Healdton	10,100	10,150
Hewitt	4,350	4,325
Holdenville	875	875
Keokuk	7,150	7,600
Konawa	1,375	1,550
Lucien	13,975	15,500
Moore	9,750	9,575
Oklahoma City	114,050	147,325
Olympic	9,350	9,600
Polo	900	900
Sasakwa and townsite	2,475	2,525
Sholem-Alechem	3,000	3,050
Seminole:		
Bowlegs	11,025	11,400
Carr City	5,050	5,075
Earlsboro	6,150	6,100
South Earlsboro	700	675
East Earlsboro	6,975	7,200
Little River	9,375	9,400
East Little River	1,100	1,125
Maud	700	700
Mission	1,975	1,925
Seminole	9,200	9,400
East Seminole	2,075	2,125
Searight	4,000	4,175
Total Seminole	58,325	59,300
St. Louis-Pearson	19,575	19,675
Tatums	6,000	5,950
Tonkawa-Garber-Thomas	4,425	4,400
Wewoka	2,775	2,800
Yale-Jennings	4,200	4,200
Other pools	80,225	79,975
Total Oklahoma	556,575	582,375

Creek County

Sand Springs Home No. 30 Atkins, NW SW NE section 5-18-7, Creek County, had Bartlesville sand at 2,553 feet, total depth 2,600 feet, and pumped 55 bbls. of oil in 24 hours, completed.

Link Oil Co. No. 7 Jones, NE SE NE section 32-18-7, an old well, was deepened from 1,429 feet to sand at 2,672-75 feet, total depth, plugged back to 2,669 feet and pumped 12 bbls. of oil daily, recompleted.

George Marble No. 1 Van Emmons, SW NE NE section 13-19-7, found Skinner sand at 2,471 feet, total depth 2,500 feet, and pumped 35 bbls. of oil and 20 bbls. of water daily, completed.

L. B. Jackson No. 6 Wills, SW SW NW section 26-18-8, an old well, was deepened from 1,350 feet to Red Fork sand at 2,601 feet, total depth 2,619 feet, pumped 50 bbls. of oil daily and was recompleted.

A. W. Swift & Co. No. 2 Hayden, NE SW SW section 12-19-9, topped Layton sand at 1,123 feet, lower Layton sand 1,156 feet, total depth 1,172 feet, and swabbed and flowed 25 bbls. of oil daily.

Cole and others No. 1 Town, SE SW NE section 14-14-10, had Wilcox sand at 3,216 feet, the hole filled with water at 3,228 feet, total depth, and it was abandoned.

Strozier Drilling Co. No. 3 Atkins, SE NE SW section 12-16-11, flowed 400 bbls. of oil in 24 hours from Dutcher sand at 2,348 feet, total depth 2,353 feet.

Fred B. Kroger No. 2 Bruce, NE NE SE section 4-17-9, was an abandoned location.

March Oil Corp. No. 18 Lee, SW SW SE section 13-18-11, was a location.

Payne County

Deep Rock Oil Corp. No. 5 Shannon, C SE SW section 23-18-3e, Mehan area, Payne County, topped Layton sand at 2,760 feet, total depth 2,889 feet, was shot and produced 4,500,000 feet of gas.

Pawnee County

Johnson Oil Refining Co. No. 1 School Land, NE SE NE section 13-20-7, Pawnee County, found Ar-

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buckle lime at 3,059 feet, total depth 3,267 feet, the hole filled with water and it was abandoned.

J. L. Reynolds and others No. 9 Mayfield, SW SW SE section 11-20-8, had Peoples sand at 969 feet, total depth 1,007 feet, and was dry and abandoned.

Peter Adamson Jr. No. 9 Thomas, SE SE SW section 25-21-8, pumped 6 bbls. of 40-gravity oil daily from Layton sand at 1,070 feet, total depth 1,136 feet and was completed.

Osage County

Pure Oil Co. and Sinclair Prairie Oil Co. No. 177 Osage, SW SW NE section 5-23-8, Osage County, was bottomed at 2,795 feet in sand, plugged back to 2,499 feet, pumped 94 bbls. of oil and 15 bbls. of water, completed.

Ross Oil Co. and others No. 4 Osage, SE NW NE section 27-28-10, had Peru sand at 1,254 feet, total depth 1,337 feet, was shot, pumped 20 bbls. of oil daily and was completed.

Midco Oil Corp. No. 3 Osage, SW SW NE section 18-22-10, was dry and abandoned at 2,181 feet, total depth, in Mississippi lime.

Champlin Refining Co. and associates No. 2 Presbury, SE NW SE section 22-25-6, South Burbank area, topped Bartlesville sand at 2,714 feet, and was dry and abandoned at 2,725 feet, total depth.

Okmulgee County

J. E. Dow and others No. 1-A Adams, SE SW SW section 12-14-14, Okmulgee County, had sand at 1,048 feet, total depth 1,070 feet, was shot and pumped 12 bbls. of oil in 24 hours.

A. G. Hazlett No. 1-A Tucker, C W half SW SE section 2-13-14, was a location. W. A. Curtis No. 1-A Anthis, SW cor. section 26-16-13, was a location.

Muskogee County

H. W. Lampton No. 1 Anthis, SE SW SW section 24-14-17, Muskogee County, was dry and abandoned at 1,760 feet, total depth.

Arthur Oil Co. No. 2 Bintz Heirs, C NW SE section 18-14-18, was dry and abandoned at total depth of 1,747 feet.

M. S. Mussellem No. 3-A Evans, NE SE SW section 32-14-19, had spudded. J. M. Foltz No. 1-A Fewell, NW SE NE section 28-15-17, had spudded.

Latimer County

Le Flore Gas & Electric Co. No. 1 Hardaway, C SW NW section 10-6-22e, was location for a new test in Latimer County.

Carter County

Three wells were completed in the Healdton area, Carter County. Kewanee Oil & Gas Co. No. 39 Jones, SW SE NW section 4-4s-3w, was completed as a 6-bbl. pumper after plugging back to 1,020 feet from 1,159 feet, total depth. First oil sand was found at 864 feet.

Magnolia Petroleum Co. No. 76 Richard, C S half NW NE section 6-4s-3w, had initial production of 31 bbls. of oil daily. It topped oil sand at 1,028 feet and was bottomed at 1,168 feet.

Kewanee Oil & Gas Co. No. 18 Willis, SE SE NE section 6-4s-3w, had sand at 1,199-1,214 feet, total depth 1,370 feet, plugged back to 1,220 feet, was shot and pumped 10 bbls. of oil daily.

New activity in Carter County: Samedan Oil Co. No. 20 Higgins, NE SE NW section 7-2s-2w, derrick; Charles Clowe No. 1-A Hefner, NW SE SW section 4-1s-3w, location; Ray Kyle and others No. 4 Johnson-McGee, SW SE SW section 17-4s-2w, rigging up rotary; Sun Oil Co. and others No. 16 Mullin A, NW NW SE section 4-4s-3w, an old well bottomed at 2,413 feet, preparing to deepen.

Jefferson County

Bridwell Oil Co. No. 4 Seay, NW NW NE section 10-7s-5w, Oscar-Seay district, southern Jefferson County, topped sand at 1,214 feet, total depth 1,249 feet, was shot and pumped 75 bbls. of oil daily.

Same company's No. 6 Seay, NE NE NW section 10-7s-5w, was shot and completed as a 70-bbl. pumper at 1,262 feet, total depth. Sand was found at 1,245-61 feet. Gravity of the oil was 36 degrees.

Farlyn Oil Co. No. 61 Seay, SE NE SW section 3-7s-5w, was a location.

Stephens County

George L. Pace No. 13 Allen, NW SE NE section 3-2s-8w, Empire field, Stephens County, had sand at 2,212-18 feet, total depth, pumped 46 bbls. of oil daily and was completed.

Frisno Oil Co. No. 2 Simpson, SW SW SE section 34-1s-8w, an old well, was deepened from 1,670 feet to 1,675 feet, and increased production 3 bbls. of oil to 6 bbls. daily.

Gulf Oil Corp. No. 14 Sims, SW SE NW section 13-2s-4w, was rigging up machine. Armor-Tomlinson No. 4 Nigh, NE NE SW section 11-2s-8w, was waiting on cement at 2,042 feet, total depth.

Additional New Work

T. H. McCasland No. 4-A Horton, NE NW NW section 8-3n-5w, Knox area, Grady County, was drilling at 1,145 feet.

Ray Stephens No. 2 Funk, SE SW SE section 1-5n-9w, Caddo County, Cement field, had dug pits, and Ohio Oil Co. No. 4 Lackey, Account 2, NE SW NW section 11-5-9w, was a location.

Indian Territory Illuminating Oil Co. No. 1 Drum, C SW NW section 32-2s-17w, was a location for a new Tillman County test.

Westoak Gas Co. had staked location for No. 1 Anderson, C NW section 15-9-25w, Beckham County.

N. Y.-Penna. Gas Fields

COUDERSPORT, Pa., Nov. 15.—Two wells were completed in the New York-Pennsylvania Oriskany sand fields during the past week in review, one of them raising the number of consecutive completions in the Woodhull field to an even dozen since it was opened last May.

G. L. Cabot, Inc., completed its test on the C. Groves farm, Woodhull Township, Steuben County, New York, with an initial flow of 3,700,000 feet per day. It had the smallest production of any well completed in the new field so far. This well topped the Oriskany sand at 4,166 feet, got the first show of gas at 4,168 feet and was completed at a total depth of 4,186 feet.

The same company likewise accounted for the second completion. Its test on the R. Johnson farm, Bingham township, Potter County, Pennsylvania, was completed at a total depth of 5,245 feet with an additional open flow of 6,000,000 feet. This test topped the Oris-

(Continued on Page 95)

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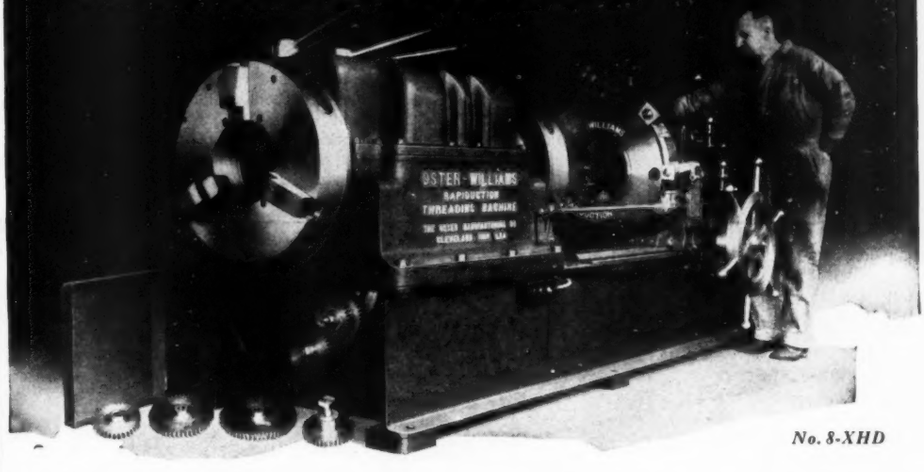

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Southwest Texas District

By GEORGE WEBER

WESTERN NUECES PROSPECT LOOKS LIKE A POOL OPENER

HOUSTON, Tex., Nov. 15.—A new oil field in Nueces County is in prospect as a rank wildcat on the western edge of the county cleans. The discovery was the only one of note in a quiet week of development in Southwest Texas. However, a number of other wildcats are showing indications of possible additional strikes in Guadalupe, Karnes, Starr, Hidalgo and Nueces counties.

Following the discovery last week of a new sand in the Seven Sisters field of northern Duval County, production in the fifth sand series of the field was established this week. Drilling in the major fields which are currently centers of activity was uneventful. A number of interesting wildcats are under way. Among the most carefully watched are those spudding on the Lower Gulf Coast below the present prolific production areas in San Patricio and Nueces counties.

The impending reduction of allowable in Texas fields will probably have some lessening effect in drilling in the more active areas, but its effect will not be felt generally in the district.

Nueces County

In the second test to be drilled in the area, the Southern Minerals Corp. seem successful in bringing in a new field for Nueces County. No. 2 King, a wildcat located in the Richard King Farm Lots, Block 6, northwest of the Agua Dulce field of Nueces County and northeast of the King gas field and the Bentonville field of Jim Wells County, was last reported cleaning into storage. The hole is bottomed at 6,219 feet. Several weeks ago, a sand section was cored just below 4,000 feet, and a drill stem test was made. The result was a recovery of 640 feet of oil and 850 feet of salt water in 20 minutes at a working pressure of 35 pounds. The test was made at 4,020-33 feet. Operators cored ahead, and last week plugged back from a total depth of 6,219 feet to the 4,000-foot sand, perforating casing at 4,017-20 feet. The well, if completed will probably be a small one, but indications point to a fairly certain discovery of Nueces County's eleventh pool.

The first wildcat to be drilled in the area by Southern Minerals No. 1 King, also had showings at the 4,000-foot level, and in addition showed high pressures at 6,500 feet where it threatened to blow out while operators were coring at 6,509 feet. In killing the well the drill stem was stuck in the hole. The test was later carried to a total depth of 7,564 feet and abandoned without making a production test in the 4,000-foot sand.

In the same county, an outpost, nearly a mile southeast of production in the South Clara Driscoll field, is showing indications of extending production. The Mills Bennett Production Co. No. 1 Johnson, NW cor. SE of section 125, has set casing at 5,115 feet. The test had a showing in sand at 5,100-10 feet, but was carried to a total depth of 5,658 feet before plugging back to test it. On the drill stem test, made last week, the wildcat showed 40 feet of oily mud and no pressure at 5,100-10 feet in 20 minutes. A showing of oil and gas was also found at 4,796-4,801 feet.

In the extreme western part of San Patricio County, the Argo Oil Corp. is encountering difficulty due to heaving shale in the wildcat, No. 1 Soehnge. The test, located 1½ miles north of Mathis, hit the shale at 6,230 feet and is setting 7-inch protective casing at 6,200 feet. Total depth is 6,310 feet.

The two principal centers of drilling activity in the Lower Gulf Coast are McCampbell and Saxet. In the former field, Atlantic Refining Co. No. 1-C Porterfield, deep test, showed high pressures at 8,889 feet total depth, and drillers are now attempting to pull stuck drill pipe having recovered some of it.

Saxet operations have been routine for several weeks. Drilling of twin wells to the various producing sands of the pool has extended over several months, and the present gradual decline in activity is due to the drilling up of proven acreage. In the southwestern section of the field, Daniel McGahey No. 1 Cody in the John Smith No. 25 has oil sand at 4,156-63½ feet and has set casing at 4,166 feet for a production test.

Attractive Wildcats

Two wildcats are attracting attention down the coast from the Corpus Christi area. Superior Oil Co. is drilling below surface casing on No. 1 Koch, located in section 32, Block 26 of the highly subdivided Riviera section off Baffins Bay. The area has been a center of active leasing and geophysical exploration for the past several months, and indications are considered good for discovery of oil in the area.

To the south in Kenedy County, near the Willacy County line, La Sal Vieja Oil Corp. is drilling below 4,250 feet on No. 1 Garcia Land & Cattle Co. The test is located 7 miles north of the La Sal Vieja oil field.

In the Lower Rio Grande Valley two deep wildcat tests attracted attention with shows. The Y. & B. Oil Co. cored gas sand at 5,399-5,422 feet in No. 1 Waite. The wildcat is located in Los Jidos Grant of Hidalgo County. The gas sand showed a kick, according to reports, and operators are coring ahead.

In the east half of the same county, located 3 miles southwest of Weslaco, Atlantic Refining Co. No. 1 American Rio Grande is coring in sandy shale below 8,200 feet. The test tried to blow out last week in gas sand at 8,025-60 feet.

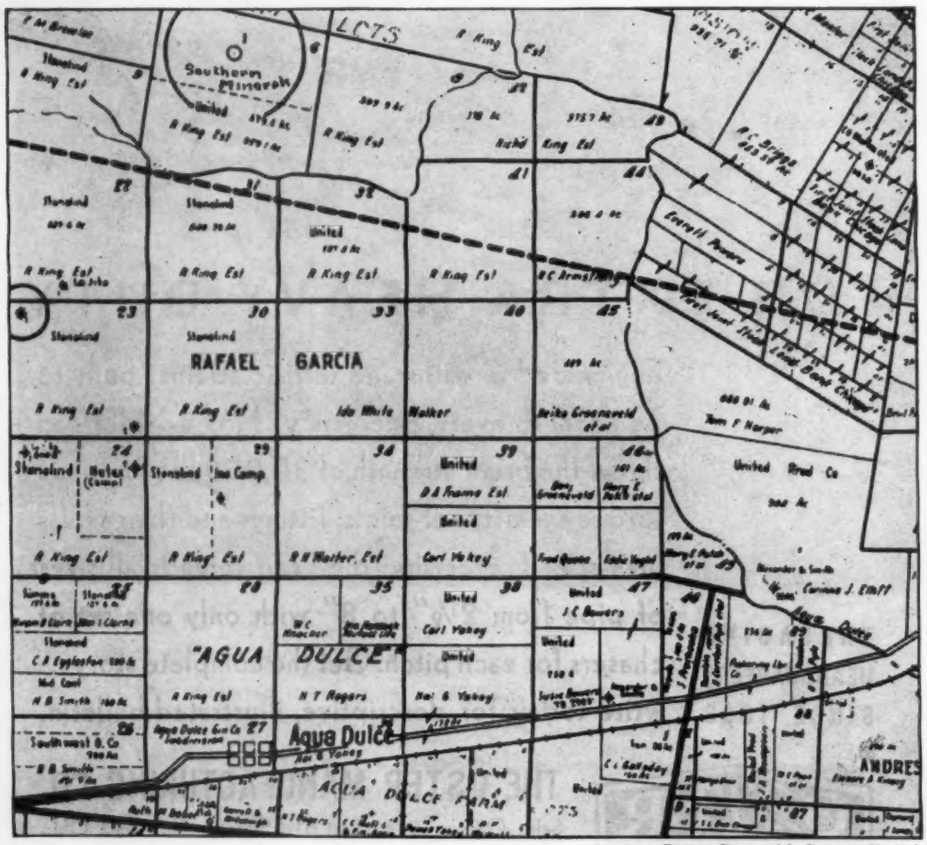
To the west in Starr County, the Sioux Oil Co. No. 6 Ricaby, located 2 miles south of the field of that name, topped a sand at 1,402 feet showing oil and gas. The wildcat is drilling ahead and will go to 1,800 feet.

Laredo District

In the Laredo district, the sole important development of the week was the opening of production in a new sand in the Seven Sisters field. Wellington Oil Co. No. 8-D Welder, Survey 381, on the northwest edge of the field, was completed during the week for an initial of 240 bbls. per day of oil, and considerable water. The well is producing from the Cole series sand at 1,717-20 feet. An 8-minute drill stem test made at 1,714-20 feet showed recovery of 1,700 feet of oil at a working pressure of 50 pounds. Seven-inch casing was set at 1,714 feet.

In the new Las Animas field of Jim Hogg County, Darby Petroleum Co. No. 1-A Holbien, the second test in the area, is plugging back from a total depth of

(Continued on Page 82)



Porter Regenold, Corpus Christi

Southern Minerals Corp. No. 2 King, a wildcat in western Nueces County, is showing indications of opening the county's eleventh pool. The test, bottomed at 6,219 feet, was plugged back to sand at 4,000 feet and casing was perforated at 4,017-20 feet. The test is cleaning into tanks. The wildcat is located 5 miles north of the Agua Dulce field

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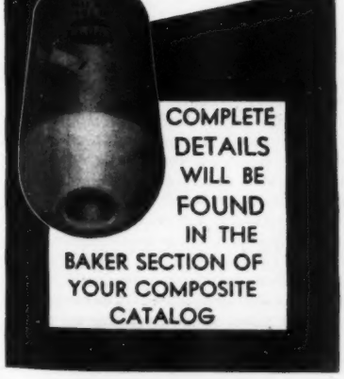

COMPLETE DETAILS WILL BE FOUND IN THE BAKER SECTION OF YOUR COMPOSITE CATALOG

Among Gulf Coast Drilling Contractors

W. V. Bowles has encountered a favorable showing in his No. 1 Robertson, a wildcat located near the town of Telferner in Victoria County. In two cores cut from 5,132-38 feet sand showing 4 per cent saturation was recovered and the hole is being cored deeper following the running of a Schlumberger survey.

C & C Drilling Co. has cemented surface casing in Salt Dome Oil Co. No. 1 Ross located in the Genoa area of Harris County while in the Magnet area, Wharton County, Humble Oil & Refining Co. No. 4 Cockburn is drilling below 5,200 feet.

Cron & Gracey report 11 active operations. Four rotaries are located in the Hastings field for Stanolind Oil & Gas Co., one at Houma in Coastal Louisiana for Fohs Oil Co., two at Hackberry for Stanolind Oil & Gas Co., one at Flour Bluff for Humble Oil & Refining Co., one at Tomball for Shell Petroleum Corp. and two at Dickinson and Katy for Stanolind Oil & Gas Co.

H. J. DeArman has, for the time being, shut down operations in the Sandy Point field, Brazoria County, following the abandonment of his No. 1 Edmundson and the completion of two producers for himself and Stanolind Oil & Gas Co. The Edmundson well is located about 6,000 feet east of production and showed salt water when tested through perforations at 6,505-09 feet. His No. 3 Fite flowed 96 bbls. per day through a 10/64-inch choke at a plugged back depth of 6,498 feet while Stanolind Oil & Gas Co. No. 2 Fite flowed 56 bbls. per day through a quarter-inch choke from a screen setting at 6,492-98 feet.

Thompson Drilling Co. is resetting screen and liner at No. 1 Chesson located a half mile from production on the southwest of the old Orange field in Orange County. When tested at 5,496 feet, the well came in flowing but sanded up due to mechanical trouble. The well is expected to make a good oiler and result in a revival of drilling activities for the field as the ownership near the well is divided among several major and independent companies.

George Echols has abandoned Cockburn and others No. 1 Mike Strauss located north of the town of La Ward in Jackson County at 6,520 feet. His No. 6 Bennett has been completed and the rig has been moved to another location. In the same field Sinclair Prairie Oil Co. No. 2 Bennett is drilling ahead. In the Lodi area contract has been received for another test for the Fohs Oil Co.

Smith & McDannald received contract from the Pure Oil Co. for No. 6 Weaver at Louise. No. 1-B Smedes, located in the St. Martinsville field, has been abandoned at 8,999 feet. It was drilled for the Tide Water Associated Oil Co. Active operations include Smith & McDannald No. 1 Gaines at the Bay City field in Matagorda County which is drilling below 4,100 feet. Five rotaries are located at Dickinson, Hastings and South Houston fields for the Stanolind Oil & Gas Co., one at Lake Long for Tide Water Associated Oil Co., one at Jennings for Shell Petroleum Corp., one at Charenton for the Pan American Production Co. and one in Arkansas for the Texas Seaboard Oil Co. and others. The latter is a wildcat test and is scheduled to be drilled below 7,000 feet.

Nichols Drilling Co. is rigging up No. 14 Harang in the Valentine field for Pan American Production Co. and continues operation at No. 12 and 13 Harang for the same company. In Jefferson Davis Parish, No. 1 Faye, a wildcat being drilled for the Continental Oil Co. is below 8,183 feet and is being watched with interest. One rig is being used on a workover at Tepetate for the same company.

Glenn H. McCarthy has marked up a deep drilling record for the Texas Coast with Sun Oil Co. No. 1 Bay Shore Farms which is drilling below 11,327 feet. He is rigging up at the Orange field for his No. 1 Brown Estate while in Jefferson County, Lee Brothers No. 1 Wilson is drilling below 6,000 feet. Texas Co. No. 1 Yount an outpost test for the West Beaumont area is spudded.

Loffland Brothers are preparing to make a production test of their No. 1 Fontenot which has prospects of opening the first oil production for the South Jennings field in Jefferson Davis Parish. The hole is bottomed at 9,003 feet and 7-inch casing is cemented at 8,943 feet. Sand showing oil and gas was cored at intervals from 8,667-8,893 feet. The rig at Abbeville which was used in opening the first oil production for that field for the Continental Oil Co. is being torn down and it is expected to be moved to another location.

Rutherford Drilling Co. is drilling below 10,000 feet at United North & South Development Co. No. 1 Lambert located at the Buckeye field in Matagorda County and is nearing the 9,000-foot level at Skelly Oil Co. No. 14-B Cobb which is scheduled to be drilled to 10,000 feet. A wildcat located on Riveria Beach in Kleberg County is being rigged up for the Superior Oil Co. while in the Taft area, San Patricio County, another wildcat is being started for Rutherford Drilling Co. and Tide Water Associated Oil Co. and others.

A new well estimated as high as 10,000 bbls. a day, potentially, came in Saturday night on the Mrs. A. Chesson 80 acres a mile and a quarter west of production in the Orange field. The well was brought in by Ryan, Thornly & Tillery in Frio sand.

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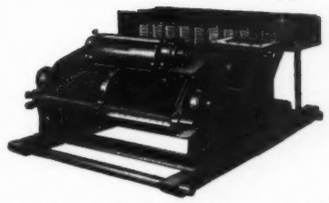

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East and East Central Texas

By MITCHELL TUCKER

MAKE 47 NEW LOCATIONS IN EAST TEXAS; TALCO PROBLEM

DALLAS, Tex., Nov. 15.—The control and disposal of salt water in the Talco field of Franklin and Titus counties will be discussed next week in a formal hearing before the Texas Railroad Commission at Mount Pleasant, Tex. About 250 of the 548 producers in that field are making water in quantities ranging from 1 to 95 per cent. Total salt water production from the field equals about 20,000 bbls. per day. Many operators are successfully disposing of their salt water by injecting it into the shallow Nacatoch sand occurring at about 900 feet. One of the objectives of the coming hearing is to determine if it is proper to dispose of salt water which is produced with the oil from the Paluxy sand by injecting it back into an overlying sand.

The west edge of the Sulphur Bluff field in the Paluxy sand was indicated last week after Sun Oil Co. No. 2 Davis, which checked about 10 feet low on all important markers, yielded only 1 bbl. of oil per hour through one-quarter inch tubing choke with about 5 per cent salt water. A thin section of saturation was logged from 4,517 to 4,526 feet. This well will be put to pumping.

The deep test of the Humble Oil & Refining Co. and Gulf Oil Corp. on the eastern flank of the East Texas field, about 2½ miles southeast of Longview in Gregg County, M. Mann Survey, is drilling ahead at 6,878 feet. Drill stem test was made last week of a porous section from 6,763 to 6,878 feet, using three-eighths inch tubing choke on top and bottom, but only 30 feet of mud filled the testing tool.

New Wildcat Locations

H. L. Parsons is moving in material for the drilling of a wildcat test on the H. B. Hembry lands 7 miles northeast of Navarro in Anderson County.

In Titus County, a new location is promised about 13 miles south of the Talco field by L. M. Hughes and associates on the Jim Sikes 200-acre tract in the Joseph Mathews Survey. A 4,500-foot test to the Paluxy and possibly below is planned.

J. K. Wadley No. 1 W. R. Thornton, P. Maulding Survey, 3 miles southwest of Gracetown and north of the East Texas field in Upshur County, is preparing to core for the Woodbine at 3,245 feet. Wadley holds a large spread of acreage in this area, which is about 1½ miles northwest of the A. Baggett No. 1 Rash, a lone producer which is considered to be on a separate structure from the East Texas field.

Abandonments

In Falls County, McCleod-Cashin and Hall No. 1 F. Boltin has been abandoned at a total depth of 1,813 feet as dry.

Bronch and others No. 1 Griffiths, 3 miles southwest of Crockett in Houston County, has been abandoned as dry, total depth 3,609 feet.

East Texas Field

Forty-seven new locations were staked in the East Texas field last week. Fifty-seven new oil wells were added during the week.

Considerable speculation exists regarding whether or not the proposed mid-month reduction in the Texas oil allowable, as recently announced by Chairman C. V. Terrell of the Railroad Commission, will effect the East Texas field. That field has been spared any portion of the statewide cuts that started in September. Commission engineers are now completing their periodical bottom-hole pressure survey of key wells, and findings from this monthly check will have a large bearing on whether or not the present daily allowable quotient of 2.32 per cent of the average hourly potential will be adjusted. Volumetric withdrawal from this reservoir continues to increase, due to new inside locations and increasing water volumes produced with the oil. From information now obtainable, it is reported that the field's reservoir pressure has exhibited practically no decline over the past 30-day period, and it is in a particularly strong position to resist a possible cut in allowable.

EAST CENTRAL TEXAS COMPLETIONS

Anderson County

F. H. E. Oil Co. No. 1 E. Tucker, 5,441 feet total depth. 115,000,000 feet of gas, casing pressure 2,040 pounds, tubing pressure 2,025 pounds, Long Lake field.

Falls County

McCleod, Cashion & Hall No. 1 F. Boltin, total depth 1,813 feet, dry and abandoned.

Franklin County

In the Talco field, G. M. W. No. 2 Bolin, 4,260-4,310 feet, 145 bbls. per day on the pump. Grey & Wolfe No. 6 Bolin, 4,215-85 feet, total depth 4,360 feet, 345 bbls. per day on the pump. Humble Oil & Refining Co. No. 47 O. P. King, 4,230-4,316 feet, pumped 225 bbls. per day. Humble Oil & Refining Co. No. 3 T. L. Leake, 4,119-4,296 feet, pumped 420 bbls. per day. Stroube-Stroube No. 5 Hendrick, 4,270-4,300 feet, pumped 50 bbls. daily.

Henderson County

F. M. Allison No. 7 Pettitte, Cayuga field, flowed 186 bbls. in 24 hours through one-eighth inch choke, sand 4,081 to 4,100 feet.

Hopkins County

Shell Petroleum Co. No. 5 Reynolds, Sulphur Bluff field, 4,475-4,507 feet, pumped 125 bbls. per day. Sun Oil Co. No. 2 E. Davis, 4,517-4,526 feet, flowed 1 bbl. per hour, one-quarter inch choke. Well will be placed on the pump.

Houston County

Branch and others No. 1 Griffiths, wildcat test 3 miles southwest of Crockett, dry and abandoned at 3,609 feet.

Titus County

Housh & Thompson No. 7 Hargrove, Talco field, 4,190-4,234 feet, pumped 405 bbls. daily. Humble Oil & Refining Co. No. 9 Monning, 4,193-4,200 feet, total depth 4,309 feet, pumped 281 bbls. per day. R. E. Moore No. 2-D Edwards, 4,260-4,290 feet, 225 bbls. daily by pumping.

EAST TEXAS FIELD COMPLETIONS

Gregg County

Atlantic Refining Co. No. 22 D. A. Porter, 42 bbls. per hour, total depth 3,712 feet. No. 11 J. Tuttle total depth 3,645 feet, 43 bbls. per hour. Black & Knight No. 4 McGrede, 3,628-3,652 feet, 70 bbls. per hour. Clark & Cowden No. 11 J. M. Christian, total depth 3,578 feet, dry and abandoned. F. H. E. Oil Co. No. 9 McChristian, total depth 3,680 feet, 21 bbls. per hour. No. 15 McChristian, total depth 3,622 feet, 20 bbls. per hour. M. E. and C. G. Glasscock No. 2 T. Snoddy, total depth 3,700 feet, 30 bbls. per hour. Gulf No. 18 Lucy & Snider, 3,519 feet, 50 bbls. hourly. Humble Oil & Refining Co. No. 26 H. M. Lawrence, 3,650 feet, 56 bbls. per hour. No. 27 H. M. Lawrence, 3,620 feet, 58 bbls. per hour. L. G. & S. Oil Co. No. 7-A McQueen, 3,574 feet, 20 bbls. hourly. Magnolia Petroleum Co. No. 17 Christian, 3,670 feet, 80 bbls. hourly. Navarro Oil Co. No. 3 Tennery, 3,630 feet, flowed 46 bbls. hourly. Rajo Oil Co. No. 13 J. C. Barnett, 3,645 feet, flowed 55 bbls. hourly. Shell Petroleum Co. No. 29 Richey, 3,622 feet, 35 bbls. per hour. Stanolind No. 11 Rodden, 3,583 feet, flowed 41 bbls. hourly. No. 15 Whatley, 3,546 feet, 65 bbls. per hour. Sun Oil Co. No. 15 Gray, 2½ bbls. per hour on the pump, total depth 3,646 feet. Tide Water Associated No. 9 Fisher, 3,490 feet, flowing 50 bbls. hourly. Arkansas Fuel Oil Co. No. 37 Hughey & Ross, 3,135 feet, total depth, flowed 23 bbls. hourly. Dyck Oil Co. No. 13 G. Blackman, total depth 3,660 feet, flowing 22 bbls. hourly. General Crude No. 7 Howard, 3,653 feet, 62 bbls. hourly. Gulf No. 9 Andrews, 3,584 feet, flowed 21 bbls. in 20 minutes. Hamil & Smith No. 4 Culp, 3,575 feet, 140 bbls. hourly. Magnolia No. 3 Sheppard, 3,593 feet, 25 bbls. hourly. Overton Refining Co. No. 16 J.&G.N.R.R., 240 bbls. in 12 hours by pumping, total depth 3,561 feet. J. F. Park No. 3 Smith, 25 bbls. in 30 minutes, 3,552 feet total depth. Renwick No. 2 Bailey, 21 bbls. in 16 hours on the pump, total depth 3,702 feet. Sun No. 56 Cole, 3,566 feet, 65 bbls. hourly. Texas Co. No. 34 Elder, 75 bbls. hourly, 3,645 feet. L. J. Wardham No. 8 Mitchell, 3,608 feet, 50 bbls. hourly.

Rusk County

Humble Oil & Refining Co. No. 12 Laird, 3,601 feet, 60 bbls. hourly. Magnolia No. 13 Brox, 3,656 feet, 60 bbls. hourly. National Petroleum Co. No. 7 Henderson, 7 bbls. per hour by pumping, total depth 3,603 feet. Navarro Oil Co. No. 28 Britewell, 65 bbls. hourly, total depth 3,613 feet. Cook Drilling Co. No. 1-G Alford, 32 bbls. in three hours, total depth 3,552 feet. Haynes Oil Co. No. 21 Lee, 3,635 feet depth, 20 bbls. hourly. Humble No. 12 Bell, depth 3,793 feet, 20 bbls. in 20 minutes. No. 20 Walker, depth 3,761 feet, 60 bbls. per hour. No. 36 Wooley, depth 3,652 feet, flowed 60 bbls. hourly. C. H. Lyons No. 2 Deason, depth 3,723 feet, flowed 78 bbls. in three hours. McDonald Brothers No. 3-A Hanna, 3,623 feet, 60 bbls. hourly. McMurray Petroleum Co. No. 3 Stone, depth 3,607 feet, initial production 100 bbls. hourly. Magnolia Petroleum Co. No. 6 Key, depth 3,822 feet, 60 bbls. houriy. Manahan Oil Co. No. 18 Neal, 3,772 feet, flowed 60 bbls. hourly. Octo Oil Co. No. 2-B Frederick, 14 bbls. hourly, depth 3,610 feet. Sinclair Prairie No. 24-B Mayfield, depth 3,616 feet, 60 bbls. hourly. Sun No. 11 Selman, depth 3,711 feet, 50 bbls. hourly.

Smith County

Brogan Oil & Gas Co. No. 6 Wright, depth 3,717 feet, flowed 23 bbls. hourly.

Upshur County

Danciger Oil & Refining Co. No. 4 Taylor, depth 3,708 feet, 60 bbls. hourly. Marison Oil Co. No. 7 Webb, depth 3,725 feet, 51 bbls. hourly. P. H. Pewitt No. 18 L. A. Williford, depth 3,668 feet, 24 bbls. hourly.

Southwest Texas Fields

(Continued from Page 80)

3,808 feet to sand at 1,765-81 feet where it will be completed for the second gasser in the field.

Karnes County's only wildcat, Ivan Howard No. 1 Moczygemba has swung casing at 2,187 feet. The well stood for a day and showed a scum of oil on the mud. Casing will not be cemented. The hole is being reamed to bottom at 2,187 feet.

The Fault Line is considerably quieter than in the recent past. In Guadalupe County, an interesting wildcat, Wellington Oil Co. No. 1 Koepp, in the William Smith Survey, is bottomed at 1,572 feet in saturated chalk, and casing is being set for a production test.

The Buchanan field is the most active in the area at present, there being four completions there during the past week. Branyon has fallen off in activity, as have Salt Flats, Luling and Darst Creek.

Wells are being completed in the Ezzell field of McMullen and Live Oak counties, as the new pipe line furnishes outlet for the production. The new producers, making good initial gauges, ranging up to 264 bbls. per day on pump. A large number of tests were awaiting installation of the pipe line for completion.

Texas and Louisiana Gulf

By
F. L. SINGLETON

1,800-BARREL WELL EXTENDS LAFITTE FIELD IN LOUISIANA

HOUSTON, Tex., Nov. 15.—While mechanical trouble was delaying the completion of Tillery and Ryan No. 1 Chesson, which is expected to open production on the southwest flank of the old Orange field, Orange County, operators along the Texas Coast were watching developments in the Segno and Cleveland fields in Polk and Liberty counties where major extensions have been indicated.

Gulf Oil Corp. No. 8 Wing, approximately a mile south of the Segno field, Polk County, has the appearance of opening a new sand and an important extension as it flows into the pit, showing pipe line oil and wash water with no evidence of salt water. It is flowing through perforations at 6,261-64 feet after a cement squeeze job had been made at the same depth earlier in the week. Production is believed to be from the lower Sabine Bayou formation, whereas production in the field proper is from the Upper Cockfield at approximately 5,100 feet. Location is in the I.&G.N. Survey No. 14.

Across the county line to the south and located in the Cleveland field, Liberty County, the same company is running 7-inch casing preparatory to testing No. 20-C Kirby Lumber Co., located 3,000 feet southeast of production. Sand showing oil was cored at 5,820-25 feet and sand with a good oil odor at 5,825-5,902 feet. Casing will probably be cemented on bottom and the well tested through perforations as the bottom of the hole is reported to have carried a brackish taste.

Surprising Failure

Prospects of extending the Sandy Point field, Brazoria County, a mile to the southeast were dimmed as H. J. DeArman prepared to abandon No. 1 Edmundson after it showed salt water on a second production test through perforations at 6,505-09 feet. A previous test at 6,520-30 feet showed the same results. The well is located in Block 51, D. Talley Survey, and its abandonment is somewhat of a surprise, since core records and electrical surveys showed favorable indications. While this test was abandoned, two producers were added. DeArman No. 3 J. A. Fite flowed 96 bbls. per day through a 10/64-inch choke at a plugged-back depth of 6,498 feet. Perforations were made at 6,483-96 feet. Stanolind Oil & Gas Co. No. 2 J. A. Fite flowed 56 bbls. per day through a quarter-inch choke from a screen setting at 6,492-98 feet.

In the Old Ocean field, Brazoria County, Harrison & Abercrombie were perforating casing preparatory to completing No. 1 Nellie Smith which is bottomed at 10,638 feet. Perforations were scheduled to be made at around 10,500 feet. Same operator's No. 1 Copeland-Osborne was drilling below 9,900 feet.

Good Well in West Columbia

Another good producer was completed for the north flank area of the old West Columbia field, with the completion of Texas Co. No. 17 Abrams which flowed 588 bbls. per day through a quarter-inch choke with tubing pressure 760 pounds and casing pressure 620 pounds. Same company's No. 4 Phillips cored sand and is bottomed at 5,745 feet with 7-inch casing cemented at 5,645 feet while No. 2 T. L. Smith is bottomed in sand at 5,547 feet with 7-inch casing cemented at 5,433 feet.

Tillery and Ryan are resetting new screen and liner in No. 1 Chesson located about a mile from production on the southwest flank of the old Orange field, Orange County. Failing to flow when tested from a screen setting at 5,930-46 feet, the total depth, the operators went back into the hole to mill out the back pressure valve and found it 83 feet off bottom. As a result the well sanded up and quit flowing when it was originally tested. A drill stem test made two weeks ago showed 1,350 feet of pipe line oil and the well is assured of opening prolific production from the Frio sand after the proper setting is made. Location is in the William Dyson Survey.

Merit Oil Co. No. 1 Wright, on the Cedar Bayou Prospect, Chambers County, is shut down once again waiting orders after it quit flowing. Perforations were made at 6,433-34 feet and at 6,431-35 feet and on a 16-hour drill stem test the operators recovered 6,475 feet of oil and salt water, 50 per cent being oil and the balance salt water. Two and one-half inch tubing was run and after swabbing for four hours it began to flow wash water and oil and then went dead.

Cockburn & Hargroves No. 1 Mike Strauss, northwest of La Ward in the A. M. Clare Survey, Jackson County, has been abandoned in sand and shale with a brackish taste at 6,520 feet. The Frio was topped at 5,274 feet. In the Ganado field, Texas Co. extended production 1,100 feet south with the completion of No. 1 Montgage Land & Investment Co. which flowed 4 bbls. per hour through a three-sixteenths inch choke with tubing pressure 500 pounds. Perforations were made at 5,080-82 feet.

Another producer for the southwest extension area of the Hardin field, Liberty County was indicated by the showing of Shell Petroleum Corp. No. 1 Hanchey, north of Frazier's discovery well in the H. B. Johnston Survey. The hole is bottomed at 7,622 feet with 5-inch casing cemented at 7,609 feet after a 15-minute drill stem test at 7,595-7,622 feet showed 3,570 feet of pipe line oil with no water. There are five active operations in the field and locations have been announced for several more.

612-Bbl. Well in Spurger

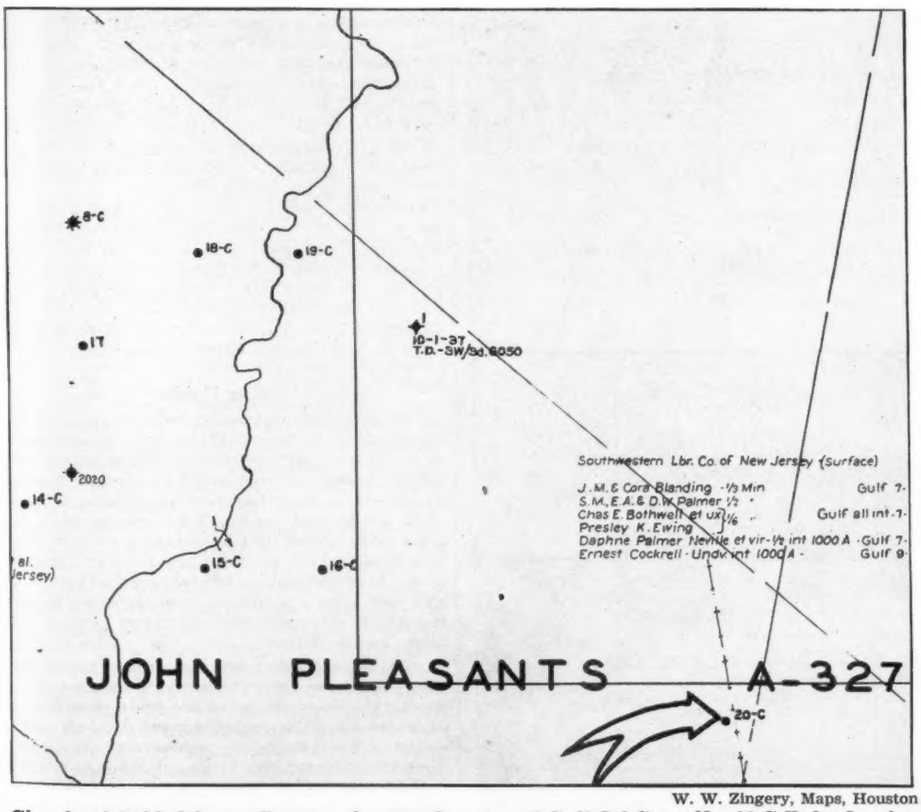
In the Spurger field, Tyler County, Republic Production Co. and Houston Oil Co. No. 5 Hurd perforated casing at 7,697-7,710 feet and on a 24-hour potential test flowed 612 bbls. per day through a quarter-inch choke with tubing and casing pressure equalized at 1,425 pounds. It is located 933 feet due east of No. 3 Hurd. Oil sands were cored at 7,639-57 feet, 7,690-7,711 feet, 7,771-74 feet and salt water sand at 7,893-7,917 feet.

J. Brian Eby and others No. 1 Rice Institute is being watched closely as it drills below 4,800 feet after topping the Cockfield at 4,569 feet. It is running only several feet higher than the company's No. 1 Urban, a dry hole to the southeast. Other geological markers reported are the Fayette at 3,552-62 feet, Marginulina at 3,662-82 feet, Massilina Pratti 3,682-97 feet and the Textularia Hockleyensis at 3,722-32 feet

Southeast of Telferner, Victoria County, the wildcat of W. V. Bowles was being watched with interest after it drilled sand at 5,130-32 feet and cored sand with a good oil odor at 5,132-35 feet which showed 4 per cent saturation. Sand with no odor was cored at 5,135-38 feet, but the last 6 inches was reported to have been wet. A Schlumberger was run and the hole is being cored deeper. Location is in the Thomas B. Burnham Survey.

Another deep producer for the old Refugio field, Refugio County, was indicated by the showing of W. F. Morgan No. 1 Lambert. Oil sand was cored at 6,214-22 feet and on a 10-minute drill stem at 6,208-22 feet, it tested 120 pounds of pressure and 555 feet of pipe line oil. Casing is being run for a production test. A revival of interest has taken place in this field due to

(Continued on Page 88)



W. W. Zingery, Maps, Houston

Cleveland field, Liberty County, showing location of Gulf Oil Corp. No. 20-C Kirby Lumber Co. which has prospects of opening an important extension

California Field Report

By
L. P. STOCKMAN

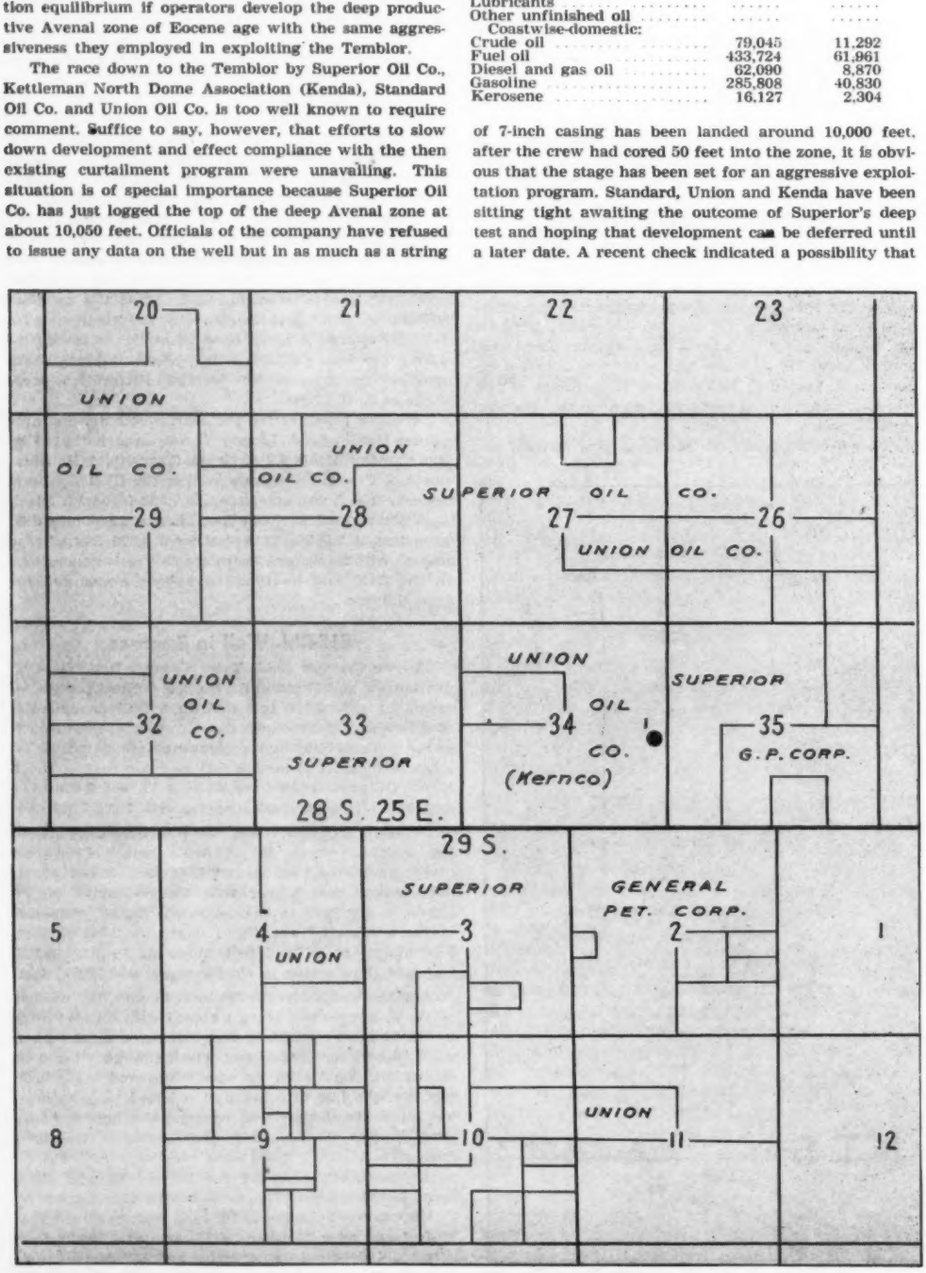
CALIFORNIA LOOKS TO BUSY AND PRODUCTIVE NEW YEAR

LOS ANGELES, Calif., Nov. 15.—That crude oil production will show a substantial increase early in 1938 is evidenced by the fact that present indications point to the drilling of about 100 new wells in the Long Beach Harbor section of the Wilmington field within the next several months and aggressive deep zone exploitation appears imminent in the Kettleman North Dome field. The latter phase will not become an important factor in the production situation until later in the year but it will present by far the most serious threat to production equilibrium if operators develop the deep productive Avenal zone of Eocene age with the same aggressiveness they employed in exploiting the Temblor.

The race down to the Temblor by Superior Oil Co., Kettleman North Dome Association (Kenda), Standard Oil Co. and Union Oil Co. is too well known to require comment. Suffice to say, however, that efforts to slow down development and effect compliance with the then existing curtailment program were unavailing. This situation is of special importance because Superior Oil Co. has just logged the top of the deep Avenal zone at about 10,050 feet. Officials of the company have refused to issue any data on the well but in as much as a string of 7-inch casing has been landed around 10,000 feet, after the crew had cored 50 feet into the zone, it is obvious that the stage has been set for an aggressive exploitation program. Standard, Union and Kenda have been sitting tight awaiting the outcome of Superior's deep test and hoping that development can be deferred until a later date. A recent check indicated a possibility that Union and Superior could each deepen four wells originally completed in the Temblor at approximately 8,000 feet. The additional 2,000 feet necessary to reach the Avenal zone could be drilled in about a month or six weeks depending upon the rapidity with which the holes could be reconditioned to permit resumption of drilling.

TANKER SHIPMENTS FROM LOS ANGELES TO DOMESTIC AND FOREIGN PORTS

	November 4		October 28			
Intercoastal-domestic:	Total this week	Daily average	Total last year	Daily average	This year to date	Same time last year
Crude oil	.....	.....	.....	.....	129,788	.....
Diesel and gas oil	.....	.....	.....	.....	176,726	151,541
Gasoline	.....	.....	123,408	17,630	3,666,922	5,295,506
Kerosene	.....	.....	.....	.....	328,907	968,157
Foreign exports:						
Crude oil	323,555	46,222	709,531	101,362	13,309,660	8,133,453
Fuel oil	229,555	32,794	254,403	36,343	12,307,115	8,999,937
Diesel and gas oil	232,730	33,247	82,757	11,822	6,633,503	4,914,197
Gasoline	23,780	3,397	9,666	1,381	6,673,733	6,382,466
Kerosene	.....	.....	.....	.....	1,967,922	1,327,570
Lubricants	.....	.....	.....	.....	12,984	.....
Other unfinished oil	.....	.....	.....	.....	974,785	155,253
Coastwise-domestic:						
Crude oil	79,045	11,292	231,689	33,098	4,807,622	6,029,327
Fuel oil	433,724	61,961	408,340	58,334	13,428,436	8,964,283
Diesel and gas oil	62,090	8,870	20,647	2,950	1,968,346	982,853
Gasoline	285,808	40,830	313,137	44,734	13,443,300	10,533,413
Kerosene	16,127	2,304	32,389	4,627	368,080	148,964



Union Oil Co., General Petroleum Corp. and Superior Oil Co. appear to control most of the potentially productive acreage in the newly discovered Rio Bravo field of Kern County

Avenal Zone Discovery

The Avenal zone of Eocene age was proved productive in the Kettleman North Dome field several months ago by Kettleman North Dome Association when its No. 4-18-J, far out on the northwest flank of the structure in section 18-21-17, on a preliminary production test flowed 1,212 bbls. of relatively clean 46.7-gravity oil and 19,500,000 feet of gas per day from 10,753 feet. Water shutoff was effected with a string of 6⅝-inch casing cemented at 10,715 feet and the well, flowing through a 50/64-inch bean, showed a tubing pressuring of 2,400 pounds and a casing pressure of 1,800 pounds, thus indicating an accumulation of extreme importance. The structural location of this well indicates that substantial production could be expected in wells more favorably located, especially in the Huffman area which has proven to be the most productive section of the structure. Due to the limited information the productivity of this new deep zone is conjectural although Kenda's production test on No. 4-18-J indicated that this zone should be found highly productive. Up to and including September 30, 1937, the Kettleman North Dome field has produced 168,878,331 bbls. of crude oil from the present productive Temblor zone and the field at present has an average daily production of 485 bbls. per well. A total of 16,510 acres is considered as proved, but since only about 5,000 acres have been developed the Temblor has produced approximately 30,000 bbls. per acre.

Other Fields

The deep zone exploitation program involving the Kettleman North Dome field may exert a pronounced effect on marketing conditions in 1938 because if substantial production is developed California marketers may be able to make increased commitments of crude oil in the Japanese market. A few months ago it appeared probable that the movement of crude oil to Japanese ports might be restricted in the face of a possible decline in production, but recent discoveries have obviated such a move. It appears probable, however, that fuel oil and diesel will command higher prices in the export market in 1938.

In addition to Wilmington, Santa Maria Valley, Kettleman North Dome and El Segundo districts it is possible that the newly discovered Rio Bravo field of Kern County and Superior's possibly productive area southeast of the Greeley field may become factors in the production situation before the close of another six months. Superior Oil Co. has not announced its intention of offsetting Union Oil Co.'s discovery well in the Rio Bravo field but will probably begin immediate work as the discovery well is located less than 1,000 feet from the

west line of Superior's lease in section 35-28-25, which adjoins Union Oil Co.'s Kern County Land lease. Union Oil Co. is not obliged to undertake any additional drilling on the Kern County Land lease for another 90 days, but it is believed that at least one additional well will be started within a few weeks. Pipe line connections to the Rio Bravo field should be finished shortly and along about the same time Standard Oil Co. should be putting the finishing touches on its new 8-inch pipe line from the Wilmington field to Hynes, a distance of 15 miles.

Long Beach

Drilling restrictions were officially lifted in the Long Beach Harbor section of the Wilmington field when ordinance No. 22 of the Long Beach Harbor Commission became effective November 11 and aggressive development is expected to get under way in the immediate future. The Long Beach Harbor Commissioners are scheduled to vote on the initial requests for permits this week, a mere formality, as all necessary requisites have been complied with. In order to keep the situation under control operators have agreed to delay drilling on the extreme eastern end of the structure pending the drilling of three outposts. In the meantime, General Petroleum Corp., discoverer of the Wilmington field, and Union Pacific Railroad, largest holder of undeveloped acreage, will proceed with development work on acreage contiguous to that containing producing wells inside the Los Angeles city limits. According to the plan agreed upon, General Petroleum Corp. will start drilling on No. 1 S.P., the location of which was staked several months ago, and start a test on its Patten & Davis Lumber Co. lease in the northern end of the harbor district. The third outpost to be drilled in accordance with this plan will be Superior Oil Co.'s initial test in the town lot area. These three outposts will determine the productivity of the immediate area and either prove or disprove much of the intervening section. Superior Oil Co. has staked locations for 10 new wells in the Long Beach harbor section of the Wilmington field.

Rio Bravo

The California oil industry apparently does not fully appreciate the real significance of Union Oil Co.'s discovery at Rio Bravo in Kern County, but this should become apparent within a few months. In the meantime, Union Oil Co. will shortly begin drilling a second test in the field which it discovered last week when No. 1-34 Kern County Land was brought in flowing 1,400 bbls. of clean 34.6-gravity oil per day from 11,302 feet. Since completion of this wildcat, located 4 miles northwest of the Greeley field, Union has acquired an additional 600 acres in the immediate area and now has a total of 2,000 acres under lease adjacent to the well. This high-gravity oil field is located on the Greeley to Semi-Tropic line of folding, and the company's geological department is of the opinion that the new Rio Bravo sand has tremendous production possibilities and may establish a new producing horizon for this section of the San Joaquin Basin. A considerable thickness of productive oil sand is expected below the present bottom as the well is producing from the uppermost 55 feet of sand. It is believed that the Rio Bravo zone found by Union will have a minimum thickness of 200 feet and may reach 300 feet. The high porosity and excellent permeability of this sand suggests a high ultimate recovery of oil and gas and it appears probable that this is the most important discovery in California since completion of the discovery well in the Kettleman North Dome field by Milham Exploration Co. several years ago. If the Rio Bravo sand attains a thickness of 200 feet and the porosity and permeability factors remain as favorable as at present this sand should yield flowing wells with initials as high as 10,000 bbls. daily. Pressure of the well indicate that the present potential is far in excess of current production which is being flowed through a 7/64-inch bean.

At the outset, Union Oil Co.'s geologists hoped to find in No. 1-34 Kern County Land at a depth of around 8,000 feet the same Miocene sand from which 35-degree gravity oil is obtained in the Greeley field. Interest heightened when the top of the Miocene was cored at 7,700 feet as predicted, but the Stevens sand was found barren. Drilling ahead with only a surface string of casing the Union's crews made 9,105 feet of open hole and then logged another formation at 10,366 feet that gave promise of resulting in production. A string of 6⅝-inch casing was landed at 10,248 feet to protect the hole and permit a formation test. The tests showed some gas and traces of oil in the formation but no commercial production. Encouraged by this showing, the crews drilled ahead and cored every foot of the way.

TANKER SHIPMENTS FROM SAN FRANCISCO TO DOMESTIC AND FOREIGN PORTS

Intercoastal-domestic:						
Diesel and gas oil					222,330	142,472
Gasoline					25,778	285,959
Kerosene					72,750	
Asphalt					413,885	327,418
Lubricants					25,522	43,543
Foreign exports:						
Crude oil			123,822	17,689	2,831,674	2,859,871
Fuel oil	31,476	4,497			1,789,632	2,287,096
Diesel and gas oil			62,565	8,938	2,593,788	1,727,450
Gasoline			155,592	22,227	4,545,902	3,385,008
Kerosene					823,159	571,023
Lubricants					474,494	323,140
Other unfinished oil						90,923
Coastwise-domestic:						
Fuel oil	64,960	9,280	120,211	17,173	5,464,320	5,559,365
Diesel and gas oil	26,779	3,826	69,803	9,972	1,233,280	579,776
Gasoline	258,851	36,979	136,714	19,531	4,878,374	4,390,727
Kerosene	18,236	2,605	69,506	9,929	338,174	175,284

At 11,240 feet the core bit penetrated a rich oil sand which, pending additional data, will be designated as the Rio Bravo sand. No. 1-34 Kern County Land is the deepest well drilled by Union Oil Co. to date, and this is the first commercial production secured below 11,000 feet in California.

There has been a tendency to refer to the new Rio Bravo sand as comparable with the Vedder sand which has been found so prolific in the Mount Poso and Round Mountain fields located along the eastern rim of the San Joaquin Basin, but conservative geologists are prone to disregard such comparison, due to the limited data available. Earl B. Noble, chief geologist of Union Oil Co., who has played an important part in the discovery

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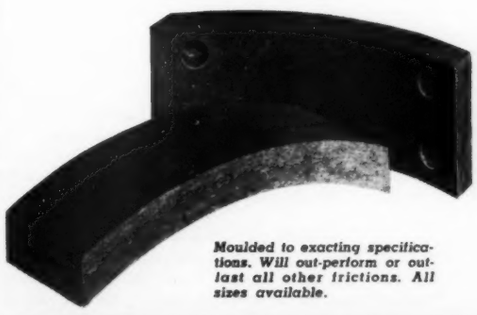

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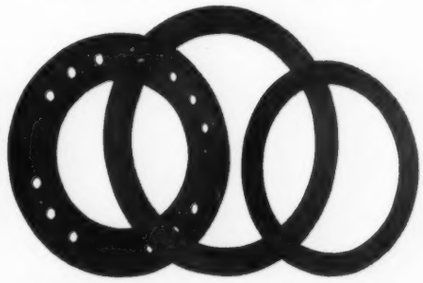

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Crude oil prices at the well effective June 22, 1936

Gravity—	Signal Hill (Long Beach)	Seal Beach	Alamitos Heights	Huntington Beach	Inglewood	Playa del Rey	Olinda-Brea Canyon	Athens-Rosecrans	Dominguez	Elwood Terrace	Torrance	Richfield	Whittier E. Coyote (La Habra)	Montebello	W. Coyote Hills	Santa Fe Springs	Mountain View	Elk Hills Buena Vista Hills Midway-Sunset Lakeview Area	Lost Hills	Coalinga	Wheeler Ridge	Kettleman Hills	Santa Paula*	Orcutt*
14-14.9	$ 80	$ .79	$ 74	$ .78	$ .79	$ 80	$ 76	....	....	....	$ 80	$ 76	$ 76	$ 77	$ 78	....	....	$ .70	$ 70	$ 70	....	....	$ 70	....
15-15.9	80	79	74	78	79	80	76	....	....	....	80	76	76	77	78	....	....	70	70	70	....	....	70	....
16-16.9	80	79	74	78	79	80	76	....	....	....	80	76	76	77	78	....	....	70	70	70	....	....	70	$ 70
17-17.9	80	79	74	78	81	80	76	....	....	....	80	76	76	77	78	....	....	70	70	70	....	....	71	70
18-18.9	80	79	74	78	84	80	78	....	....	....	82	76	76	77	78	....	....	70	70	70	....	....	73	72
19-19.9	82	79	74	82	87	84	81	....	....	....	85	76	78	77	78	....	$ 70	74	74	71	$ 70	....	75	74
20-20.9	85	79	74	85	90	88	84	....	....	....	88	78	82	77	80	....	70	78	78	72	70	....	77	77
21-21.9	88	79	74	89	93	93	88	....	....	....	91	80	85	77	84	$ 78	73	82	82	74	70	....	79	80
22-22.9	92	82	74	92	96	98	92	....	....	....	93	84	89	79	88	78	77	87	86	78	72	....	82	83
23-23.9	95	86	77	96	99	1.02	96	$ 84	$ .79	....	96	88	93	82	92	78	80	92	90	82	76	....	85	86
24-24.9	99	91	80	1 00	1.02	1.06	99	88	81	....	99	91	96	85	96	82	84	97	94	86	79	....	87	88
25-25.9	1 03	95	82	1 03	1 05	1.11	1 03	93	83	....	1 02	95	....	89	99	86	88	1 01	98	90	.83	....	90	91
26-26.9	1 06	1 00	85	1 07	1 09	1 16	1 06	98	86	....	1 05	98	....	92	1 03	90	91	1 06	1 02	....	....	....	92	93
27-27.9	1 10	1 05	88	1 11	1 12	....	1 10	1 03	88	....	....	1 02	....	96	1 06	95	95	1 10	1 06	....	....	....	95	....
28-28.9	1 14	1 10	90	1 14	1 15	....	1 14	1 07	90	....	....	1 06	....	99	1 10	99	99	1 15	1 10	....	....	....	97	....
29-29.9	1 17	1 15	93	1 18	1 18	F.O.B.	1 17	1 12	93	....	....	1 09	....	1 03	1 14	1 03	1 02	1 20	1 14	....	....	....	99	....
30-30.9	1 21	1 19	95	1 22	1 21	our	1 21	1 17	95	F.O.B.	....	....	....	1 07	1 17	1 08	1 06	1 25	1 18	....	....	....	1 01	....
31-31.9	....	....	....	....	1 24	Pipe	1 24	1 22	97	Ship	....	....	....	1 11	1 21	1.12	1 09	1 29	....	....	....	....	....	....
32-32.9	....	....	....	....	1 27	Line	1 27	1 27	1 00	....	....	....	....	1 14	1 25	1.16	1 13	1 34	....	....	....	....	....	....
33-33.9	....	....	....	....	....	....	....	1 32	....	$1 28	....	....	....	1 18	1 28	1.20	1 17	1 38	....	....	....	$1 19	....	....
34-34.9	....	....	....	....	....	....	....	1 37	....	1 32	....	....	....	1 22	1 32	1 25	1 20	....	....	....	....	1 23	....	....
35-35.9	....	....	....	....	....	....	....	1 42	....	1 35	....	....	....	1 25	....	1 29	....	....	....	....	....	1 27	....	....
36-36.9	....	....	....	....	....	....	....	1 46	....	1 39	....	....	....	1 29	....	1 33	....	....	....	....	....	1 31	....	....
37-37.9	....	....	....	....	....	....	....	1 51	....	1 43	....	....	....	1 32	....	1 37	....	....	....	....	....	1 35	....	....
38-38.9	....	....	....	....	....	....	....	1 56	....	....	....	....	....	1 36	....	1 42	....	....	....	....	....	1 39	....	....
39-39.9	....	....	....	....	....	....	....	1 61	....	....	....	....	....	1 40	....	....	....	....	....	....	....	....	1 43	....	....
40-40.9	....	....	....	....	....	....	....	1 66	....	....	....	....	....	1 43	....	....	....	....	....	....	....	....	....	....	....

Newhall, McKittrick, Kern River, Kern Front and Round Mountain, 70 cents for all grades. *Posted by Union Oil Co. Same company's Brea Canyon schedule stops at $1.14 for 28 degrees and over, and Belridge and Lost Hills schedule stops at $1.32 for 37 degrees and over. By Standard Oil Co., effective October 15: El Segundo, 14 to 18.9 degrees, 80 cents; 19-19.9, 82 cents; 20-20.9, 85 cents; 21-21.9, 88 cents; 22-22.9, 92 cents; 23-23.9, 95 cents; 24-24.9, 99 cents; 25-25.9, $1.03; 26-26.9, $1.06; 27-27.9, $1.10; 28-28.9, $1.14; 29-29.9, $1.17; 30-30.9, $1.21. Wilmington, 14 to 16.9, 75 cents; 17-17.9, 77 cents 18-18.9, 79 cents; from 19 degrees upward, prices same as Signal Hill.

of the Santa Maria Valley field and the Williams sand in the Midway-Sunset field as well as the new zone at Rio Bravo, is of the opinion that it is too early to attempt to correlate the Rio Bravo and Vedder sands. The 11,302-foot column indicates that the bottom-hole pressure in No. 1-34 Kern County Land is somewhat in excess of 4,000 pounds but it is questionable what the initial pressure was at the surface because the crew installed a 2,000-pound gauge and the needle moved over to the maximum 2,000-pound mark and stopped. This limited gauge was replaced and a subsequent record showed 2,050 pounds. Current production is being trucked to the Union's Rio Bravo pump station but crews are already at work laying a 6-inch pipe line from the well to Rio Bravo pump station and this 5-mile unit should be completed within another few days. Completion of this wildcat is particularly interesting because in 1924 Union Oil Co. drilled a wildcat about 1 mile west on a topographic high but it proved a duster and was abandoned at 6,053 feet.

Wilmington

Only three new wells were completed in the Wilmington field of Los Angeles Basin during the current week but now that drilling restrictions have been lifted in the Long Beach Harbor section development work should show a substantial increase and this will result in numerous completions later this year and extend well over into 1938. Union Pacific Railroad Co., which has another two years' drilling program ahead, completed No. 5-C, flowing 402 bbls. of clean 17.1-gravity oil per day from 3,318 feet. This company has four potential producers standing cemented on top of the pay and should have the entire quarter tanking oil within several days. Bankline Oil Co. completed No. 23 D. H. C., flowing 318 bbls. of clean 19.3-gravity oil daily from 3,330 feet. It was finished with 328 feet of 6⅝-inch liner including 321 feet of perforated, landed at 3,328 feet and was brought in flowing through a 24/64-inch bean under a tubing pressure of 220 pounds and a casing pressure of 300 pounds. Colter & McAdoo, the latter U. S. Senator from California, have completed their No. 1 flowing 430 bbls. of relatively clean 17.3-gravity oil daily from 3,646 feet after the hole had been finished with 756 feet of 8⅝-inch liner including 700 feet of perforated landed on bottom and cemented through perforations at 2,949 feet.

Los Angeles Basin Fields

In El Segundo field Richfield Oil Corp. completed No. 1 Howard, pumping 251 bbls. of very clean 17.5-gravity oil daily from 7,494 feet. This well is interesting because of the low-gravity oil which contrasts sharply with the usual 26-gravity crude produced by other wells. Standard Oil Co. has concluded drilling operations on No. 4 Refinery in the Schist at 7,474 feet and preparations are under way to install pumping equipment. Top of the oil sand was logged at 7,248 feet and top of the Schist at 7,343 feet.

In the East Coyote field, Standard Oil Co. completed No. 2-11 Coyote, flowing 586 bbls. of 25.1-gravity oil, 5 bbls. of water and 1,535,000 feet of gas per day from 4,145 feet. It is flowing through a three-quarter inch bean and was finished with 330 feet of 6⅝-inch liner including 296 feet of perforated landed on bottom.

In the Richfield district, Mid-State Petroleum Co. has completed No. 1 Oliver in section 22-3-9, pumping 252 bbls. of 16.1-gravity oil daily from 1,600 feet, plugged back from 1,742 feet.

In the Rosecrans field A. N. Macrate completed No. 2 Gray flowing 117 bbls. of clean 31.8-gravity oil daily from 8,345 feet, plugged back from 8,403 feet. This well located in the eastern end of the field shows a tubing pressure of 180 pounds and a casing pressure of 1,000 pounds.

In the Torrance field, Keystone Consolidated Oil Co. completed No. 2 Redondo pumping 124 bbls. of 14.2-gravity oil per day from 3,423 feet.

Greeley-Ten Section

Standard Oil Co. is expected to complete two new wells in the Greeley field within another fortnight as formation tests on two drilling projects showed favorable recoveries and No. 11-10 Kern County Land is in the pay at 7,762 feet. Formation test on No. 1 Fleishauer in section 20-29-26, with bottom at 7,721 feet and tester at 7,652 feet, indicated a potential of 750 bbls. of clean 60.3-gravity oil and 7,000,000 feet of gas and a second test with bottom at 7,746 feet and tester at 7,722 feet indicated a flow of 1,000 bbls. of clean 28.9-gravity oil and 9,500,000 feet of gas. No. 11-9 Kern County Land, with bottom at 7,740 feet, flowed at the rate of 1,000 bbls. of clean 60.9-gravity oil and 9,000,000 feet of gas per day. In the Ten Section field of Kern County Shell Oil Co. made a formation test on No. 8-A Kern County Land in section 28-30-26 with bottom at 8,288 feet and tester at 8,238 feet and open 30 minutes resulted in a recovery of sand, water, mud and some gas, but no oil. Northwest of the Ten Section field Ohio Oil Co. has bottomed its No. 3-E Kern County Land at 8,175 feet after coring 80 feet of oil sand and has landed a string of 7-inch casing preparatory to an early production test. This well, which is expected to result in the discovery of a new oil field in Kern County, looks exceptionally good as on a recent formation test the well showed a potential of 2,500 bbls. of oil and approximately 10,000,000 feet of gas. Since completion of this formation test the hole has been deepened to the depth noted above and has showed up even better.

San Joaquin Basin

In the Kettleman North Dome field Kenda has completed No. 41-4-P in section 4-22-17 in Fresno County flowing 2,525 bbls. of clean 35.6-gravity oil per day on a compressor at 8,065 feet and should have No. 6-6-Q tanking oil shortly.

In the Mount Poso field Ring Oil Co. has completed No. 2 Louden in section 32-26-28 pumping 298 bbls. of very clean 16.1-gravity oil daily from 1,763 feet and

(Continued on Page 94)

Rocky Mountain Runs

Production estimates for week ended November 13:

WYOMING

	Bbls.
Salt Creek	16,570
Big Muddy	1,380
Badger Basin	250
Black Mountain	200
Byron	2,130
Dallas Derby	590
Dutton Creek	50
Elk Basin	610
Frannie	2,210
Garland	2,380
Grass Creek	1,070
Hamilton dome	1,310
Hidden dome	340
Hudson	310
LaBarge	1,000
Lance Creek	12,670
Lost Soldier	1,340
Medicine Bow	4,900
Mule Creek	80
Midway	60
Oregon Basin	7,330
Osage	820
Pilot Butte	20
Quealy dome	700
Rock River	2,710
South Casper	500
Poison Spider	370
Teapot	30
Wertz	310
Total Wyoming	62,240

MONTANA

Border	100
Cat Creek	580
Cut Bank	8,120
Kevin-Sunburst	4,990
Pondera	1,290
Total Montana	15,080

COLORADO

Colorado	220
Fort Collins and Wellington	210
Iles dome	2,750
Moffat	390
Orchard	40
Rangely	80
Tow Creek	180
Price	410
Total Colorado	4,280

NEW MEXICO

Cooper	5,450
Eaves	1,060
Eunice	28,060
Hardy	1,400
Hobbs	16,290
Jal	1,150
Langlie	2,490
Lynch	680
Lynn	360
Mattix	2,140
Monument	29,480
North Lynch	60
Penrose	4,040
Rhoades	120
Skelly	1,680
South Eunice	2,190
Vacuum	80
Artesia-Maljamar	6,820
Getty	200
Hogback	210
Rattlesnake	840
Table Mesa	90
Total New Mexico	104,890
Total Rocky Mountain region	186,490

West and North Texas

By MITCHELL TUCKER

SEVEN WILDCATS STARTED IN TEXAS PERMIAN BASIN AREA

FORT WORTH, Tex., Nov. 15.—Seven new wildcat locations were announced throughout the Permian Basin area of West Texas, one in Culberson County, one in Floyd County, one in Glasscock County, two in Pecos County, and one each in Ward and Winkler counties. During the week 54 oil well completions were made, and four wildcats abandoned as dry. At present there are 45 locations and 374 drilling wells throughout the West Texas area proper. Pecos County remained a center of interest during the past week, as Humble's shallow discovery southwest of Fort Stockton, and Magnolia's Ordovician prospect continued to look favorable.

Humble Oil & Refining Co. No. 1 Jane B. Langer, 8 miles southwest of Fort Stockton, was fishing for lost bit at 2,586 feet. No oil increases have been noted since 500 feet of heavy 16-degree gravity oil and 300 feet of water rose in the hole when a bailing test was made at 2,560 feet after drilling a thin section of saturation topped at 2,550 feet. If more saturation is not penetrated in deeper drilling, the hole will probably be plugged back and complete production tests made.

To further test this immediate area in which Humble Oil & Refining Co. is an extensive lease holder, two new wildcat locations were started last week, one an east offset to No. 1 Lunger and the other a quarter of a mile north. Both new locations are upon short term leases.

In northern Pecos County, Magnolia Petroleum Co. No. 1-A McKee, Ordovician prospect, is shut down at 4,917 feet waiting for new 4-inch drill pipe. It is reported that this well topped the Simpson lime zone of the Ordovician at 4,914 feet, or several hundred feet higher than Gulf Oil Corp. No. 5 W. N. Waddell, famous 8,200-bbl. producer in the Ordovician flush field of western Crane County, some 11 miles to the north. A 12½-inch hole has been cut to 4,900 feet, and hole is now to be reduced, leaving a shoulder should it later be decided to set casing on top of the Simpson. This well will continue to be one of the most important wildcat tests in the basin.

The Chalk field in Howard County was extended 1¼ miles northeast by the completion of Johnson and Bruce No. 2-C Hyman, pumping and flowing at the rate of 27 bbls. hourly after a 2,000-gallon acid charge, total depth 2,906 feet. It is thought that this extension may possibly result in the linking of the Chalk and Snyder pool, 4½ miles further north.

CENTRAL AND NORTH CENTRAL TEXAS

A new oil pool was definitely opened about 8 miles west of Cisco, Eastland County, when Hickok Producing & Development Co. made production test of their No. 1 Van Parmer, flowing 901 bbls. of 42-gravity oil in 20 hours through 6-inch casing from 7 feet of porous Ellenberger limestone bottomed at 4,025 feet. Lenticular gas bearing zones have formerly been drilled on this property, occurring from 3,750 to 3,830 feet in sandy lime.

The Bryson pool of Jack County was given a 1-mile extension to the northeast following the completion of Joe Wortham and others No. 1 O. E. Cash, which flowed 145 bbls. daily from the Lower Bryson sand, 3,270 to 3,278 feet. Total depth is 3,303 feet.

Official gauge is expected soon on the Avoca field's north extension well. Fain & McGaha and Sinclair Prairie Oil Co. No. 1 Mrs. Frances Olson in northeastern Jones County. On initial test the well flowed 75 bbls. the first hour but dropped to 132 bbls. in the next two hours. Production is from the Palo Pinto saturation 3,213-16½ feet. This first extension to the Avoca field is considered important because of its indication that the porous limestone will persist over a relatively large area. New locations are expected here soon.

K.M.A. Field

Important lease trades, important completions and extensions, and intense activity marked another busy week in the K.M.A. field's boom exploration of the deep pay.

Most important among lease trades for the week was the payment of $100,000 cash and other considerations by King Oil Co. and Perkins Cullum of Wichita Falls to Charles Mangold of Dallas for a 256-acre tract in the P. Castleman Survey, all within the proven area of the 4,000-foot development.

Outstanding among extension wells completed during the week was the Jack Kadane and others No. 1 Mangold, in the extreme western portion of the field and 1 mile out from production in the Castleman Survey. After drilling 47 feet of heavily saturated oil sand, topped at 3,698 feet, initial flowing gauge was estimated at 3,000 bbls. daily. During an 11-hour test the western extensioner flowed 1,800 bbls., filling all field storage and pits. A change in the type of formation was noted in this well, which appears to be a true sand as compared to limey and sandy formations carrying saturation to the east.

About 40 wells are now drilling in the field and nine rigging up. Of this number, over half are expected to reach the pay next week. Many locations have been authorized throughout the area that have not yet been started.

PANHANDLE DISTRICT

Indications are that deep wildcatting throughout the Panhandle district and down into the triple row of nonproducing counties separating the Panhandle and the West Central districts, is to continue on an increasing scale during the next few months. Lease trading is active both by majors and independents. The new looming wildcat campaign is expected to be to much deeper levels than the recorded failures in the area. Mills Bennett Production Co. is building rig for a 6,000-foot test on the Montgomery land in Floyd County, about 6 miles south of the town of Floydada.

For the first time in many weeks, no new gas wells were completed in the Panhandle area. Fourteen oil wells were added, 12 in Gray County and two in Hutchinson County.

WEST TEXAS COMPLETIONS

Bailey County

A wildcat test, J. O. Whittington No. 1 McCelney, has been plugged and abandoned.

Crane County

Sinclair-Prairie No. 2-27 University, 3,548-65 feet, flowed 3,032 bbls. daily. Jordon field. Gulf No. 162 McElroy, McCamey field, 2,750-59 feet, flowed 628 bbls. daily through casing after 407-quart shot. Ennis Crane No. 3-C Hughes, 2,008-87 feet, pumped 944 bbls. daily, 5,000 gallons of acid. Big Basin Petroleum Corp. No. 1 Cowden, wildcat test in C.C.S.D. and R.G.N.G. Survey, dry and abandoned, depth 3,473 feet.

Dawson County

E. L. Wilson and others No. 1 T. H. Scanlon, 4,902-65 feet, pumped 96 bbls. fluid per day, 7 per cent salt water.

Ector County

Atlantic No. 2 Johnson, 4,130-4,250 feet, pumped 333 bbls. daily, Foster field. Stanolind No. 5-B Cowdon, 3,985-4,116 feet, flowed 1,139 bbls. daily through casing. In the Goldsmith field, Rogers and Rogers No. 3 TXL, 4,195-4,305 feet, pumped 222 bbls. daily after acidizing. Cities Service Co. No. 6-B Cummings, 4,171-4,268 feet, flowed 618 bbls. daily. Rogers and Rogers No. 1-B TXL, 4,110-4,289 feet, flowed 466 bbls. Dunning No. 6 Scharbauer, 4,170-4,223 feet, flowed 1,189 bbls. Gulf No. 48 Goldsmith, 4,200-35 feet, flowed 2,040 bbls.; No. 49 Goldsmith, 4,187-4,225 feet, flowed 2,248 bbls. daily through casing. Landreth No. 7-B Scharbauer, 4,150-4,205 feet, flowed 1,789 bbls. daily. In North Cowden field, Stanolind No. 61 Cowden, 4,005-4,295 feet, flowed 836 bbls. daily. Ohio No. 1 L. E. Wright, 4,170-4,235 feet, flowed 600 bbls. per day.

Howard County

Sinclair-Prairie No. 51 Dodge, 2,480-2,525 feet, flowed 600 bbls. daily through casing. Ennisbrook No. 16 Texas Land Mortgage Co., 2,643-2,815 feet, swabbed 908 bbls. per day. Shaska No. 12 Dodge, 2,404-2,761 feet, flowed 1,425 bbls. Illinois Oil Co. No. 6 Lane, 2,500-2,535 feet, pumped 779 bbls. per day. Magnolia Petroleum Co. No. 2 A. E. O. Daniel, 2,668-2,800 feet, flowed 616 bbls. per day through casing.

Gaines County

Amerada Petroleum Corp. No. 1 Matthews, 4,903-98 feet, plugged back from 5,018 feet, pumped 215 bbls. fluid daily, 14 per cent salt water.

Jones County

In the Guitar field, Danciger Oil & Refining Co. No. 9 Guitar, 1,975-2,083 feet, 465 bbls. per day. S. C. Herring No. 3 H. C. Jackson, 1,975-2,003 feet, flowed 400 bbls. Sherwood B. Owens No. 3 W. Gilbreth, 1,967-2,001 feet, flowed 405 bbls. In the Hawley area, Ungren and Frazier No. 1 H. H. Dorsey, 1,960-2,175 feet, 172 bbls. per day; No. 2 Sakely, dry and abandoned at 2,105 feet. Brown Eagle Oil Co. and Charles J. Kleine No. 2 Bert Fields, water sand 2,219-35 feet total depth, dry and abandoned.

Pecos County

Cardinal Oil Co. No. 18-A Smith, depth 396 feet, pumped 11 bbls. per day. Paul Childers No. 24 Smith, 353-400 feet, pumped 6 bbls. At Yates, Ohio Oil Co. No. 18-D Yata, 1,185-1,375 feet, flowed 160 bbls. through casing.

Loving County

Barnett Petroleum Corp. No. 18 Johnson, water sand 3,153-67 feet, dry and abandoned, total depth 3,174 feet.

Upton County

T. & P. No. 9-D Shirk, 2,322-2,400 feet, 309 bbls. daily. Sergent-Rutter-Wilbank No. 4 Elder, 2,225-50 feet, pumped 840 bbls. Texas Co. No. 4-34 King, 2,084-2,180 feet, 172 bbls. on pump after acid. J. K. Hughes No. 2 Powell, dry and abandoned at 2,807 feet. Choate and Hogan No. 5 Baker, 2,303-85 feet, pumped 200 bbls. daily.

Ward County

Texas Co. No. 1-C University, 2,438-2,678 feet, flowed 747 bbls. per day. Gulf No. 59 Estes, 2,487-2,630 feet, flowed 728 bbls. through casing; No. 60, 2,503-2,670 feet, flowed 133 bbls.; No. 62 Estes, 2,503-2,680 feet, flowed 1,540 bbls. Atlantic and Standard of Texas No. 7-B Urun, 2,550-2,770 feet, flowed 759 bbls. Kagle and Doss No. 1 Probest, dry and abandoned at 2,520 feet.

Winkler County

Skelly Oil Co. No. 3-B Daugherty, 3,044-65 feet, flowed 912 bbls. Humble Oil & Refining Co. No. 17-C Walton, 3,024-65 feet, flowed 936 bbls. Stanolind No. 3 Hendrick, 2,868-3,100 feet, flowed 137 bbls. Gulf No. 19 O'Clapp, 3,017-3,115 feet, flowed 1,650 bbls. through casing. Humble No. 21-C Colby, 3,063-80 feet, flowed 426 bbls. W. Little No. 3 Walton, 3,290-3,402 feet, flowed 149 bbls. daily in the Keystone field.

CENTRAL TEXAS COMPLETIONS

Jones County

Butler & Horne No. 1 Mrs. R. Cox, total depth 2,790

feet, dry and abandoned. S. C. Herring No. 3 N. C. Jackson, 1,977-97 feet, 400 bbls. per day. T. D. Humphrey No. 1 Guitar B, 2,005-12 feet, 125 bbls., completed as No. 4; No. 2 Guitar Trustee Estate B, abandoned location. Lewis Production Co. No. 8 Sayles, 1,976-81 feet, 463 bbls. per day. Maro Oil Co. No. 1 F. M. Webb, total depth 1,750 feet, dry and abandoned. Southern Oil Co. No. 1 B. W. Thane, total depth 3,301 feet, dry and abandoned. West, Honea, Ungren & Frazier No. 1 J. B. Southard, total depth 3,500 feet, dry and abandoned.

Callahan County

Dunn & Adair No. 1 A. L. Pittman, total depth 1,945 feet, dry and abandoned.

Eastland County

Hickok Producing & Development Co., 4,024-25 feet, 1,040 bbls. per day.

Stephens County

Barnett Petroleum Corp. No. 1 J. Q. Corbett, 3,998-4,001 feet, total depth 4,005 feet, 80 bbls. oil and 1,500,000 feet gas.

Palo Pinto County

Lone Star Gas Co. No. 1 Hart Oil Corp., total depth 4,157 feet, dry and abandoned.

Gulf Coast Fields

(Continued from Page 83)

the development of deeper sands within the past several months.

Two New Tests in Harris

Two wildcat locations were reported, both being in Harris County. In the Fairbanks area, Amerada Petroleum Corp. and Stanolind Oil & Gas Co. are moving in for No. 1 E. M. Mills located in the A. Larson Survey, while in the Huffsmith area, H. J. DeArman is moving in for No. 1 Gieske in the Isaac Bunker Survey.

Along the Louisiana Coast operators were watching the progress of Union Sulphur Co. No. 1 Calcasieu National Bank, western Jefferson Davis Parish, after several cores showed good evidence of oil and gas. The first core was cut at 8,022-42 feet and the recovery was 1 foot of sand with a good odor at bottom of core. From 8,042-47 feet was sand with a good odor and a slight cut, and from 8,047-52 feet was sand having a good odor and good cut while from 8,052-57 feet the recovery was sand showing oil. It is coring ahead. The well is located about 3½ miles northeast of the Iowa field and about 5 miles northwest of the Welsh field in section 12-9s-6w.

Lafitte Extended

The Lafitte field, Jefferson Parish, was extended several hundred feet west with the completion of Texas Co. No. 1 State Bayou Norman, which flowed at the rate of 1,817 bbls. per day through a three-eighths inch choke with tubing pressure 1,600 pounds. Gravity of the oil tested 37.7 degrees. Production is through perforations at 9,530-9,630 feet. It is located in section 28-17s-24e and is the deepest test drilled in the field, having reached a depth of 12,115 feet where high gas pressure resulted in a stuck drill stem. This is the fifteenth producer for the field all being productive from 9,400 feet to depths below 10,000 feet. It is still undefined in any direction.

In the South Jennings field, Jefferson Davis Parish, Loffland Brothers were preparing to test No. 1 Isac Fontenot located in section 16-10s-3w. The hole is bottomed at 9,003 feet and 7-inch casing has been cemented at 8,943 feet. Several sands showing oil and gas have been cored at intervals from 8,667 to 8,893 feet and the production test will be made through perforations. This is the fourth test to be drilled on the structure, the discovery well was completed this year as a distillate well at 8,639-48 feet. The other two tests were abandoned.

The second well to be drilled in the Lake Long field, Lafourche Parish, tested salt water, and screen and liner are being pulled from Fohs Oil Co. No. 3 State which is bottomed at 9,539 feet. It is located 1,320 feet north of the discovery well, which was completed through perforations at 9,365-73 feet. The hole will probably be plugged back to 9,300 feet where showings of oil were cored in the discovery horizon.

A second sand for the Gibson field, Terrebonne Parish, was uncovered by Shell Petroleum Corp. No. 3-B Realty as it showed 23 bbls. of 38.2-gravity oil on a drill stem test at 9,060-67 feet. The hole is being carried to the discovery horizon at 9,400-9,500 feet. Location is in section 18-17s-15e.

Continental Oil Co. No. 1 Brookshire, completed last week as the first oil producer for the Abbeville field, Vermilion Parish, flowed 514 bbls. of pipe line oil on a 24-hour test through a three-sixteenths inch choke. The oil tested 43.5 gravity under a casing pressure of 2,850 pounds and tubing pressure 2,150 pounds. Production was obtained in a new sand through perforations at 7,845-90 feet. It is possible that a pipe line will be laid to the company's system from the Tepetate field to Lake Charles, a distance of about 30 miles from Abbeville.

William Helis No. 2 City of New Orleans located on the Marchland Salt dome, Lafourche Parish, topped salt at 7,946 feet and is bottomed in salt at 7,974 feet where a Schlumberger survey is being run. This is the second test drilled by Helis and both wells have encountered the salt.

At the Quarantine Bay Prospect, Plaquemines Parish, Gulf Oil Corp. is running 9⅝-inch casing to bottom at No. 3 State which assured the district of a new field last week when it showed 1,500 feet of pipe line oil on a drill stem test at 8,127-44 feet, the total depth. By running the heavy 9⅝-inch string indicates that the company will carry the test deeper in search of a deeper sand.

At Wax Lake, St. Mary Parish, Texas Co. No. 1 State is trying to recover 252 feet of stuck 5¾-inch casing which was being run to 10,745 feet. The hole was plugged back from a total depth of 11,808 feet. The well is to be tested as soon as the pipe is recovered.

Approximately $1 out of every $6 collected from motorists by state governments is not being spent on roads. Such diversions this year will reach a total of close to $180,000,000. Personal property and automotive taxes paid to local governments will also be applied to nonhighway purposes, bringing the total of automotive taxes not earmarked for roads to an estimated $585,000,000.

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Finished in gray enamel with blue jaw panel and bright faced jaw edges.

"BOLL-WEEVIL ZEPHYR". Again Williams steps ahead with a light-weight pattern of the popular "Boll-Weevil" Reversible Action Tong. Stronger and lighter, capacity for capacity, the "Zephyr" is ideal for flat pipe work and pipe line work—exceptionally efficient in trenches. Operates by simply laying Tongs on top of pipe and hooking chain around it. To "make up", engage rear end of jaws and push handle down; to "break out", pull tongs back to engage forward teeth and pull up on handle—reversible action is instantaneous.

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Central West

WILDCAT FAILURES IN FIVE COUNTIES IN ILLINOIS FIELD

By STAFF CORRESPONDENT

MATTOON, Ill., Nov. 15.—The past week was a bad one for Illinois wildcatters. Dry holes in Fayette, Jasper, Washington, Richland and Clay counties were reported. The best well of the week was a 1,113-bbl. initial producer in Richland County.

Pure Oil Co. completed No. 2 Scrugham, SW NW NW section 9-2n-8e, Clay County. It was acidized at 2,985-88 feet and flowed 213 bbls. the first 24 hours.

Duncan Brothers No. 1 Riggs, NW NW SE section 27-2n-8e, Clay County, was dry and abandoned at 3,040 feet.

Target Drilling Co. No. 1 Zollar, SW SW SE section 17-3n-2e, was abandoned as dry at 2,500 feet.

Pure Oil Co. No. 6 C. Wilkins, SW SW SE section 28-3n-8e, Clay County, was acidized at 3,002-03½ feet, but produced only 9½ bbls. of oil.

Pure Oil Co. No. 1 Mosley, NE SW NW section 33-3n-8e, flowed 386 bbls. the first 24 hours from pay at 2,946-66 feet.

In Marion County, Adams Oil & Gas Co. No. 14-A Merryman, CEL NW NW section 28-4n-1e, started at 70 bbls. a day from sand at 1,412-18 feet, shot with 15 quarts. Same company's No. 2 Wasem B is a 32-bbl. well from sand at 1,442-44 feet.

Charles L. McMahon deepened No. 1 Federal Land Bank, SW SE NW section 27-4n-9e, Richland County, to 3,050 feet, but it was still dry at that depth and was ordered abandoned.

A test in Fayette County was dry and abandoned. It was Oil Development Co. No. 1 Vance, SE SE SE section 16-7n-2e. It topped Ste. Genevieve lime at 2,063 feet and drilled in 1 foot and stopped. Weiler sand lay at 1,808-14 feet and Bethel at 1,908-13 feet, both dry.

A Jasper County test failed to find oil and was abandoned. W. R. Anderson and others No. 1 Hetzger, C W half NE SE section 10-7n-8e, found Ste. Genevieve limestone at 2,885 feet, and McClosky lime at 2,915 feet, with a showing of oil at 2,990-95 feet. It was drilled to 3,220 feet and is marked as a dry hole.

In Richland County Pure Oil Co. completed a 1,113-bbl. initial producer in No. 5 Palmer-Taylor, NW SW SE section 5-3n-9e. It had pays at 2,951-60 feet, total depth of 2,977 feet and flowed naturally.

Fortney Oil Co. also got a good well in Richland County in its No. 1 Warden, SE SE SE section 8-3n-9e. It flowed 682 bbls. the first 24 hours from sand at 2,940-57 feet which had been given two charges of acid, 1,000 and 3,000 gallons. It had previously flowed 232 bbls. naturally in eight hours.

Lambert & Giffert No. 1 Lessman, NW NW NW section 36-1n-2w, Washington County, was abandoned at 1,666 feet. Sand at 1,570-1,630 feet was dry.

Richland County

In Richland County, Pure Oil Co. No. 1 Schneider, had Ste. Genevieve limestone at 2,920 feet and was coring at 2,980 feet. W. F. Lacey No. 1 Galloway, SE SE SE section 8-3n-9e, had pay at 2,959-63 feet, and cemented 5-inch casing at 2,945 feet. Pure Oil Co. No. 1 Wilson, NW NE NE section 8-3n-9e, found pay at 2,945-66 feet, and cemented 7-inch casing at 2,945 feet. Max Pray was drilling at 2,532 feet in No. 1 Bahr, NW cor. SE NW section 16-3n-9e. Mammoth Producing & Refining Co. was coring at 3,135 feet in No. 1 McCauley, SW SE NW section 28-3n-9e. It topped Ste. Genevieve limestone at 3,085 feet and had no showing of oil. Kingwood Oil Co. and McMahon have rig up for No. 1 Negley, NW NW SE section 31-5n-9e. Pure Oil Co. was rigging up No. 2 Frost, C W half SW SW SW section 9-3n-9e. Joe Fitzgerald had rig up for No. 1 Ingle, NE NW NW section 16-3n-9e. P. L. Hoffman had rotary rigged up for No. 1 Hanna, CNL NW SE section 27-3n-9e. Morrison and German had rig up for No. 1 Montgomery, NW cor. NE NE section 17-3n-9e.

Carter Oil Co. No. 3 Watkins, NE NE SE section 33-4-9, had pay at 2,998-3,008 feet, and set 5-inch casing at 2,983 feet. The well flowed naturally for 24 hours producing 282 bbls. of oil. It was then given 4,000 gallons of acid in three doses, but had not yet been opened for a test.

Mammoth Producing & Refining Co. No. 2 Stanford Heitz, SE SW NW section 34-4n-9e, total depth 3,150 feet, was plugged back to 3,048 feet. It had not been tested. Ray & Alford have rig up for No. 1-A Franklin, NW cor. section 34-5n-10e, a wildcat in the northeastern part of the county. Louis Godlin and others No. 1 Garrett, near C W half SE SE SE section 8-3n-9e, set 10-inch casing at 194 feet, and were drilling at 450 feet. Pure Oil Co. No. 2 Eagleton, SE NE NE section 7-3n-9e, is a location. Roberts and others No. 1 Hanna, C W half SE SE SE section 8-3n-9e, had a pay at 2,943-44 feet, total depth. Seven-inch pipe was set at 2,942 feet and the crew will drill in with cable tools. Pure Oil Co. No. 1 Frost, SE cor. SW SW SW section 9-3n-9e, at a total depth of 3,098 feet, gave the pay three doses of acid aggregating 4,000 gallons. It had flowed 80 bbls. naturally in 14 hours.

Clay County

In Clay County, C. H. & C. Oil Co. No. 1 Duff and others, SW NW NE section 7-3n-8e, found sand with a showing of oil at 2,915-53 feet and was drilling at 2,961 feet. Vermilion Oil Co. No. 1 Duff, NE SE NE section 19-3n-8e, was coring at 2,630 feet. Wiser Oil Co. No. 11 D. Smith, NE SW NE section 28-3n-8e, was at a total depth of 3,013 feet. The McClosky formation was missing and the crew was to test sandy Dolomite at 2,900-06 feet. Graham & Duncan No. 4 Land Bank, SW SE NE section 8-2n-8e, was at a total depth of 3,018 feet. It cored from 2,970 to 3,018 feet. A drill-stem test developed 360 feet of oil in the hole in 12 hours. Same operators No. 6 Land Bank, SE SW NE section 8-2n-8e, had pay at 2,986-95 feet, total depth 3,000 feet. Seven-inch casing was set at 2,953 feet and plug was being drilled. Pure Oil Co. No. 1 Leon Clark, NE NW SE section 8-2n-8e, had pay at 3,003½-16 feet, and was coring ahead. Pure Oil Co. No. 1 W. H. McKinney, NW SW SW section 9-2n-8e, found Weiler sand at 2,670-2,700 feet with no saturation and was coring at 2,993 feet. Southern Illinois Petroleum Co. No. 1 Nodecker, NW SE SW section 23-3n-8e, was drilling at 1,980 feet.

Wildcats

In Perry County, J. H. Forrester's deep test, No. 1 fee, C W half SW NW section 5-6s-1w, topped black lime at 5,250 feet and was in sand at 5,251-52 feet, total depth.

In Randolph County, Mabee Consolidated Corp. and W. A. Delaney No. 1 Wilson, NE SE NE section 3-4s-5w, had Niagara limestone at 2,345 feet, and was drilling at 2,375 feet. It had a small showing of oil.

In Clinton County, Bartelso Oil Co. No. 3 Schlorman, NE cor. NW SE SE section 2-1n-3w, found sand at 976-96 feet and was shot with 30 quarts at 974-94 feet. It had not been tested. Santa Fe Oil Co. was drilling at 550 feet in No. 2 Robbins, NW cor. SE SE section 5-1n-3w. Doc Schmidt No. 1 Streune, NE NW NE section 5-1n-1w, was a location for a cable tool test. McClanahan Oil Co. No. 1 Hester, SE cor. NE NW SW section 26-3n-1w, was running 8-inch casing at 1,180 feet.

In Lawrence County, Strauss and others No. 1 Robeson, NW SE NE section 16-3n-10w (from Indiana principal meridian) was drilling at 2,770 feet.

In Fayette County, Hurrican Creek Oil Co. had cellar and pits dug for No. 1 Moore and others, SW SW SW section 24-6n-1w. John Farrelly and others No. 1 Lilly, SE SW SE section 16-8n-3e, had a salt water sand at 1,200-65 feet and was shut down. Carter Oil Co. No. 1 Miller, C W half NW NW section 12-8n-3e, drilled to 3,170 feet and plugged back to 3,100 feet and set 5⅞-inch casing at 3,064 feet. The hole was acidized with 1,000 gallons and brought up two bailers of water an hour, and 25 bbls. of oil. It will be re-acidized with 2,000 gallons.

In Effingham County, Kingwood Oil Co. No. 1 Bartel, C W half NE NW section 26-6n-5e, was drilling at 3,925 feet, after topping Chattanooga shale at 3,910 feet.

In Hamilton County, J. Garfield Buell and others No. 1 Dickey, SE SE SW section 22-3s-7e, had dry sand at 3,076-3,111 feet, and topped Ste. Genevieve lime at 3,355 feet. The hole was being reamed.

In Christian County, Rogers Brothers and others No. 1 Johnston, NE SE SE section 27-12n-2w, set 10-inch casing at 60 feet and was drilling. Parshall & Graham No. 1 Yockey, SW SW NW section 36-15-2w, drilled to 3,005 feet. It had St. Peter sand at 2,930 feet. The hole was plugged back to 2,000 feet and a test was made at 1,989-97 feet. It was acidized and later flowed salt water and oil. It was then plugged back to 1,966 feet to test Niagara limestone at 1,946-52 feet.

In Massac County, Kahle and others were shut down at 2,831 feet in No. 1 Harrick, SW SW SW section 23-14s-3e.

In Saline County, Will Rogers and others were drilling at 980 feet in No. 1 Saylor, SE SE SE section 3-10s-6e.

In Jefferson County, Nollem & Benoist No. 1 Kelly, NE NW NE section 25-4s-2e, was drilling at 216 feet, after setting 15-inch pipe at 60 feet. L. A. Painter and others abandoned the location for No. 1 Osborn, C NW SE section 8-2s-2e.

In Wayne County, Washburn Petroleum Co. No. 1 Acola, NW NE NW section 31-2s-6e, was shut down at 3,042 feet.

In Jefferson County, Carter Oil Co. No. 1 Tate, in section 10-1s-2e, had Ste. Genevieve lime at 2,180 feet and was shut down for lack of water at 3,035 feet. It cored at 2,590-99 feet, and recovered 7 feet of core which had a sulfur odor.

In Wayne County, Carter, Porter and others made a location for No. 1 Riggs, SE NE SW section 26-2n-8e. Fitzpatrick & Myers, who have been trying to make a producing well of No. 1 Shannon, SW NW SE section 26-2n-8e, for many weeks, acidized it with 1,000 gallons and put it on the pump. It produced 180 bbls. gross in 24 hours. It was shut down. Duncan Brothers No. 1 Riggs, NW NW SE section 27-2n-8e, total depth 3,040 feet, flowed 583 bbls. of oil in a 24-hour test, but was not yet a completion.

OHIO

FINDLAY, Ohio, Nov. 15.—An even dozen gas wells, five oil wells and seven dry holes, a total of 24 completions comprised the records of the week in the Ohio fields in the past week.

In Belmont County, Somerset Township, section 2, Huntsman and others completed No. 1 William Schneider in the Keener sand, a gas well gauging 2,500,000 feet. Top of the Keener was at 1,277 feet.

In Coshocton County, Pike Township, section 8, Hulse & Kuntz completed No. 4 C. O. Moore for a 25-bbl. well, after a shot in the Clinton sand, topped at 3,273 feet.

In Guernsey County, Monroe Township, section 24, George Jewell drilled No. 1 Edward Taylor to the Berea formation at 1,238-47 feet for a gas well gauging 178,000 feet.

In Knox County, Jefferson Township, section 10, Upham Gas Co. No. 1 George Young was a dry hole, abandoned at 2,905 feet.

In Licking County, Hopewell Township, second quarter, Wehrle Gas Co. completed No. 1 G. D. Orr in Clinton sand for an 87-bbl. well the first 24 hours after shot. Top of the Clinton was at 2,982 feet. In Perry

Township, section 14, Rutlege and others completed No. 11 William Teagarden in Berea sand, a 5-bbl. well after a shot. Top of Berea was at 662 feet. In Newton Township, Bebout & Son drilled the No. 3 H. W. Gleckler through the Berea. It was a dry hole, total depth 683 feet.

In Lorain County, Avon Township, section 12, Ohio Fuel Gas Co. No. 1 Steve Mesaros is a gas well in the Clinton, gauging 1,100,000 feet, naturally, at a total depth of 2,553 feet. In the same township, section 2[illegible], William Dempsey No. 1 Bernard Urig is a gas well in the Clinton gauging 2,000,000 feet, naturally. Total depth 2,410 feet.

In Meigs County, Bedford Township, section 8, Holmes and others drilled No. 1 Nellie Smith to the first Berea. It had a show of oil and gas, and was shot with 30 quarts. The shot did not increase production, so it was plugged and abandoned, total depth 1,665 feet. In Salisbury Township, section 28, Mayer and others No. 3 Georgia Williamson was drilled through Maxon sand and was a dry hole, total depth 800 feet. In the same township, section 34, Bowman and others completed No. 1 Harriett Musser in the Maxon for a gas well gauging 150,000 feet, naturally. The total depth was 969 feet. In the same township, section 21, A. N. Bengel No. 4 G. Boulard is a gas well gauging 400,000 feet naturally from the first Berea. Top of the sand was at 1,472 feet. In Sutton Township, section 19, C. Riley No. 3 Grant Bossett is a 1-bbl. pumper in the first Berea, total depth 1,782 feet.

In Monroe County, Center Township, section 16, N. T. Stout No. 2 Jane Jackson was completed as a Keener sand oil well good for 2 bbls. per day at a total depth of 1,395 feet.

In Muskingum County, Perry Township, southeast quarter, Atha Realty Co., in its deep test No. 1 F. H. Clark, had a show of gas in the Clinton, which a shot did not improve. The hole was plugged and abandoned at 4,620 feet.

In Tuscarawas County, Sandy Township, third quarter, Natural Gas Co. of West Virginia had a show of gas in the Clinton at 4,875-4,903 feet in No. 1 William F. Holshoy. It was shot and started at 110,000 feet per day.

In Noble County, Beaver Township, section 12, Barnesville Development Co. completed No. 1 Mary E. Hunt as a small gas well in the Berea. The top of the sand was at 1,558 feet. In Buffalo Township of the same county, section 24, Chaseville Oil & Gas Co. No. 4 Ira J. Fulton, completed a small gas well in the Berea sand, topped at 1,497 feet.

In Stark County, Jackson Township, section 2, East Ohio Gas Co. No. 1 Bertha Hoffman is a gas well gauging 750,000 feet after shot in Clinton sand, total depth 4,400 feet. In Lawrence Township same company completed No. 1 Henry G. Miller for a Clinton sand gas well good for 829,000 feet per day at a total depth of 4,114 feet. Rock pressure was 1,245 pounds.

In Washington County, Independence Township, section 28, Herlan & Smith drilled No. 5 O. W. Lynch through the Salt sand and got a dry hole, total depth 1,249 feet. In Liberty Township, section 21, Best Run Oil & Gas Co. completed No. 1 John Martin for a gas well in the Germantown sand, gauging 183,000 feet naturally. The sand was at 1,050-83 feet. In Salem Township, section 28, Wooster & Wooster No. 5 John Fleeman at total depth of 1,700 feet found no Berea sand and was plugged and abandoned.

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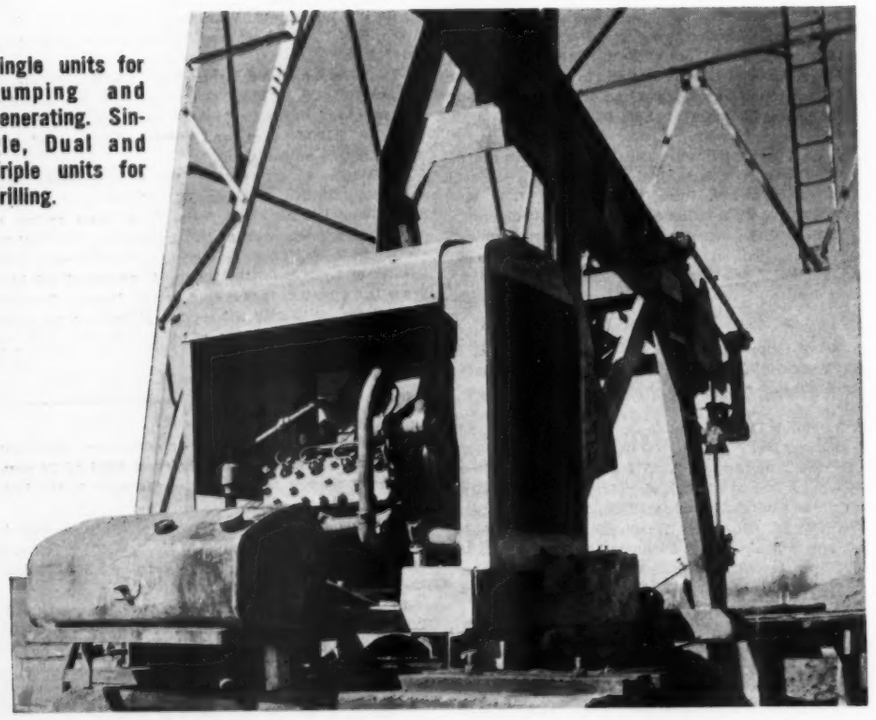

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EASTERN KENTUCKY

ASHLAND, Ky., Nov. 15.—Five oil wells and one gas well were completed and a dry hole is included in the report from Eastern Kentucky counties this week.

Mrs. Agatha Wireman completed No. 21 on the J. M. Townsend land on South Fork in Powell County which started at 5 bbls. per day. Petroleum Exploration reports the completion of No. 16 Pripe Heirs, an oil well near Duck Fork in the Ida May district of Lee County. Also in Lee County Thomas Whitner drilled a dry hole, No. 4 on the C. J. Tipton land on Billies Fork. C. G. Mays completed No. 10 on Medley S. Cole land on Little Sinking in Lee County at total depth of 964 feet with flow of 75 bbls. of oil per day.

The Central States Oil Co. No. 6 on the M. Shoemaker land, at Zoe, started at 25 bbls. per day at a total depth of 1,158 feet.

The Inland Gas Corp. completed No. 3 on the R. C. Kilgore land on the Right Fork of Troublesome Creek at a total depth of 3,605 feet in white shale. The well has an open flow of 431,000 feet of gas from the shale.

Floyd County

The Kentucky-West Virginia Gas Co. is down 2,012 feet, in Berea sand, in No. 534 Jennie Caldwell, on Levisa Fork in Floyd County. The same firm was drilling at 1,464 feet in No. 557 Ingram Stepp on Johns Creek and is down 540 feet in No. 558 John Layne at the Mouth of Camp Branch of Levisa Fork.

Inland Gas Corp. is moving in No. 3 J. C. Hopkins on Stratton Branch of Levisa Fork. Kentucky-West Virginia Gas Co. was drilling at 1,170 feet in slate in No. 559 John Dilion on Dropping Lick Fork of Ivy Creek. The same firm is idle at No. 5233 John F. Burchett on Cow Creek. Kentucky-West Virginia is down 1,325 feet, in black lime, in No. 5229 John W. Woods on Porter Branch.

Knott County

The Inland Gas Corp. was drilling at 2,020 feet, in Maxon sand, in No. 1 Mayo Craft, on Right Fork of Troublesome Creek, close to a gas well. Inland is down 450 feet in slate on the Whittaker & Waddell land in the same vicinity.

Martin County

The Kentucky-West Virginia Gas Co. is moving to location for No. 560 Melissa Ward on Rockhouse Fork of Rockcastle. The same firm is fishing No. 5226, C. W. Preece land, on Coldwater Fork and is idle in No. 5232 on the same land and drilling at 1,233 feet, in sand, in No. 5231 on the same farm.

Magoffin County

A. V. Hoenig reports an unusually good showing, but no figures, on No. 12 Paris Long on Litteral Fork in the Wheelersburg district of Magoffin County. The well started flowing November 6, caught fire and burned most of drilling machine before it was extinguished. It has not been completed.

Bed Rock Petroleum Co. is idle in No. 13 J. J. Prater on Prater Fork of Mash Fork due to a breakdown of machinery.

Lee County

Thomas Whitner was drilling at 200 feet in No. 5 Tipton on Billies Fork. McCown & Wissing were drilling

at 200 feet in No. 6 on Marvin Hollon land on Billies Fork.

Brener & Adams are drilling at 845 feet in No. 1 H. C. Johnson on Bear Fork. South Penn Oil Co. is down 850 feet in No. 96 Flahaven Land Co. on Big Sinking.

WESTERN KENTUCKY

OWENSBORO, Ky., Nov. 15.—Twelve completions, including three oil wells, 2 gassers and seven dry holes, were recorded in the Western Kentucky district in the past week. Eight new operations were reported. Following is the week's review:

Hancock County

Easton district: J. C. Ellis No. 20 Link Richards, 100 bbls., Jett sand. Johnson & Young No. 3 Cressie Huff, 25 bbls., Jett sand.

Pellville district: C. D. Walker No. 2 Elmer Boling, 140,000 feet of gas, 134 pounds rock pressure, Jackson sand 527-42 feet, total depth 552 feet; No. 3 spudding in. Frank Damron and others No. 5 Fred Boling, drilling at 300 fet.

Ohio County

Askin district: Weir & May No. 2 Ollie Basham, drilling at 340 feet.

Fordsville district: Barney Calvert and others No. 6 N. R. Baize, drilling at 300 feet.

Narrows district: Noliem Oil & Gas Co. No. 2 Homer Robinson, dry hole, total depth 985 feet; No. 3 M. Lloyd rigging up.

Olaton district: Cox & Lang No. 1 Robert Armes, drilling at 650 feet.

Haynesville district: Moss Oil Co. No. 4 W. H. Lyons, drilling at 440 feet.

Westerfield district: Mrs. Rawlings No. 4 Wilbur King, dry hole, total depth 725 feet.

Adaburg district: B. & B. Oil Co. No. 3 Ben Midkiff, dry, hole, total depth 750 feet.

Friendship Church district: Joseph B. Mayers and others No. 4 Tom Hamilton, dry hole.

Dundee district: DeHart & Lykins No. 12 H. J. O'Dell Heirs, 50 bbls., Jackson sand 522-36 feet, total depth 541 feet.

Daviess County

Haynes district: Ross & Henry No. 2 Tula Lamar, 926,000 feet of gas, 205 pounds rock pressure, Jones sand 603-15 feet.

Utica district: Amos Schaffer and others No. 3 Boyd Bristow, rigging up.

McLean County

Grindstone Hill district: Ohio Oil Co. No. 6 G. B. and R. L. McManama, drilling at 1,200 feet. Burt Cameron and others No. 5 W. P. Ashton, spudding in.

Nuckols district: Pampas Oil & Gas Co. No. 6 W. A. Stevens, 25-acre tract, drilling at 350 feet.

Bates Knob district: J. C. Miller, trustee, No. 3 George Bryant, dry hole, Stray sand 1,118-26 feet, total depth 1,130 feet; No. 4 rigging up.

Island district: South Penn Oil Co. No. 1 Mrs. Rena Brown, deep test, drilling at 2,670 feet.

Breckenridge County

Van Zant district: J. C. Ellis No. 2 Albert Decker, dry hole, Bethel sand 458-75 feet. Kentucky Natural Gas Co. No. 5 W. J. Robinson, dry hole, through Jackson sand.

Falls of Rough district: A. V. Smith and others No. 4 Green Brothers, dry hole, through Bethel sand.

Webster County

Sebree district: I. Browning and others No. 6 Ramsey, deep test, drilling at 175 feet. Sellers & Koker No. 2 Froy Powell, drilling at 70 feet.

Slaughters district: Imperial Oil & Gas Co. No. 1 Archibald Estate, deep test, fishing at 2,520 feet.

Grayson County

Falls of Rough district: A. V. Smith and others No. 5 Green Brothers, rigging up.

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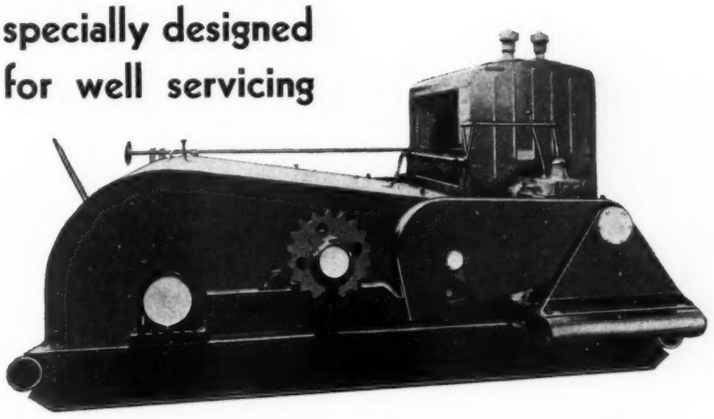

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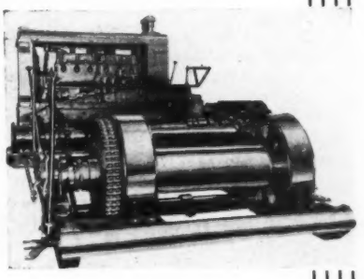

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Kansas Developments

By
DAL DALRYMPLE

OUTPOSTS IN NORTH BARTON COUNTY PROVE NEW AREAS

Four Kansas wildcats were completed as producers the past week, two opening new oil areas in Greenwood County, one uncovering oil production in a new Butler County sector, while the third proved additional Grant County acreage for gas production.

Progress of several other Kansas wildcats were watched with interest during the week as they neared decisions. Some of these already were considered pool openers, due for early completion. One of these was the National Refining Co. No. 1 fee, SE NE SE section 36-27-2e, 9 miles east of Wichita in Sedgwick County and near the Butler County line. Operators were preparing to run 5-inch casing to complete in Wilcox sand. Pay sand was topped at 3,087 feet and at 3,098 feet, total depth, it filled up with 2,000 feet of oil. The wildcat is 5 miles southeast of the Eastborough pool, nearest production.

The Ford County wildcat being drilled by Olson Oil Co. and Baden & Hough No. 1 Fowler, C SW sec. 26-27-22w, topped Mississippi lime at 5,045 feet, had a showing of oil at 5,060 feet, and was drilling ahead at 5,100 feet in lime. This wildcat is on a core-drilled structure mapped about 10 years ago and checked recently by a reflection seismograph survey.

Magnolia Petroleum Co. No. 1 Baird, SW SE SE section 2-30-4w, Sumner County wildcat, pumped 63 bbls. of oil the first four hours of potential test, 67 bbls. the next four hours and made potential of 378 bbls. of oil, with 2½ bbls. of water. Total depth was 4,395 feet, 1 foot in Simpson pay.

Colonial Oil Co. and Bernheimer No. 1 Albert, SW SW NE section 31-12-18w, interesting wildcat in Ellis County, was reported running high on formations in comparison with other wells drilled in the same area. It is southwest of the Shutts district and northeast of the Yocemento pool. It topped anhydrite at 1,517 feet, hard lime at 2,170 feet, and was drilling ahead largely in lime and shale formations, with cavings in blue shale reported at 2,925-50 feet.

The market demand for Kansas oil in December was estimated at 186,000 bbls. daily by the U. S. Bureau of Mines, 3,700 bbls. less than the November estimate. November allowable production is 180,215 bbls. daily. The general hearing to determine the December allowable will be held at Wichita November 23, E. G. Dahlgren, director of the Conservation Division of the Corporation Commission, has announced. Hearing on gas-oil ratios in the Burrton field, Reno County, has been postponed from November 18 to December 16.

Wildcat Completions

The new Siliceous lime discovery well 1½ miles north of the Beaver pool in Barton County headed the wildcat completion list of the week in Kansas. It was the Tom Palmer, C. S. McGhee and J. P. McKee No. 1 Polzin, NW NW SE section 4-16-12w, which made potential of 949 bbls. of oil. Gravity of the oil was 39.2 at 60 degrees. Top of anhydrite was 795 feet, Kansas City lime 3,050 feet, Gorham sand 3,311 feet, Siliceous lime 3,316 feet, total depth 3,326 feet.

Shell Petroleum Corp. No. 1 Ehrlich, NE NE NW section 18-16-13w, between the South Trapp and Peterman areas, north Barton County, topped Siliceous lime at 3,357 feet, was bottomed at 3,372 feet, pumped 535 bbls. of oil in eight hours and made potential of 1,387 bbls.

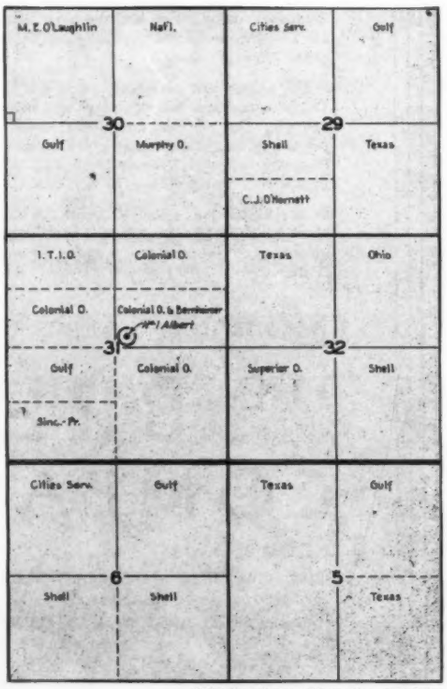
A new producing area northwest of Eureka in Greenwood County was opened at Ward McGinniss and others No. 1 Henley, SW cor. section 25-25-9. It found Mississippi lime at 2,140 feet, total depth 2,234 feet, and pumped 10 bbls. of oil and 10 bbls. of water daily.

Another gas area was uncovered north of Ulysses in Grant County at R. K. Wilson No. 1-22 Helmly, C SE section 22-28-37w. It produced 7,642,000 feet of gas at 2,720 feet, total depth. Seven-inch casing was set at 2,338 feet.

Other wildcat completions of the week offered little to enthuse over. Superior Oil Corp. and others No. 1 Casey, SW SE SE section 35-10-19w, Rooks County, topped Simpson zone at 3,648 feet, had Siliceous lime at 3,651-86 feet, total depth, and was dry and abandoned.

H. F. Wilcox Oil & Gas Co. No. 1 Parker, SE SE NE section 9-11-40w, far western outpost in Wallace County, failed to find showings of oil and was dry and abandoned at 5,270 feet, total depth. Top of anhydrite was 2,700 feet, Blaine 2,940 feet, Cedar Hills 3,190 feet, Mississippi lime 5,108 feet.

In Ellis County, Lario Oil & Gas Co. No. 1 Bell, NW NW NE section 8-12-18w, topped anhydrite at 1,445 feet.



Mid-Continent Map Co., Wichita

Colonial Oil Co. and Bernhemier No. 1 Albert, SW SW NE section 31-12-18w, Ellis County wildcat, was reported running high structurally

Conglomerate 3,730 feet, Siliceous lime 3,862 feet and was dry and abandoned at 3,876 feet, total depth.

R. E. McNeely and others No. 1 Hille, C SE NE section 22-15-14w, Trego County wildcat, found Siliceous lime at 4,665 feet, total depth 4,727 feet, had nothing showing and was dry and abandoned.

Bell Oil & Gas Co. and others No. 1 Timbers, NW NW NE section 8-21-8w, outpost in Rice County, had Viola lime at 3,388 feet, Simpson zone 3,445 feet, Siliceous lime 3,499-3,522 feet, total depth, and was dry and abandoned.

California-Illinois-Kansas Oil Co. No. 1 Evans, SW SW NW section 11-22-9, Chase County wildcat, topped Mississippi lime at 2,427 feet, had a hole full of water at 2,455-60 feet, total depth, and was dry and abandoned.

Stanolind Oil & Gas Co. No. 1 Shank, SE cor. section 17-24-13w, wildcat in Stafford County, was dry and abandoned at 4,145 feet, total depth. It found Viola lime at 4,025 feet and had a slight showing of oil at 4,128-29 feet.

Barton County

The busy Susank-Trapp district of northern Barton County accounted for eight of the week's completions, including the Ehrlich discovery producer.

Phillips Petroleum Co. No. 3 Bitter, NW NW NE section 6-16-13w, topped Siliceous lime at 3,357 feet, was bottomed at 3,386 feet, plugged back to 3,379 feet, swabbed 221 bbls. of oil in 17 hours, was acidized and made potential of 896 bbls., with 2 per cent water.

Stanolind Oil & Gas Co. No. 1 Allen, SW SW NW section 25-16-13w, found Siliceous lime at 3,419 feet but was dry and abandoned at 3,440 feet, total depth.

Same company's No. 2 Morrison A, SE SE SW section 27-16-13w, made potential of 1,125 bbls. of oil after acid treatment and was completed at 3,414 feet, total depth. Siliceous lime was topped at 3,405 feet.

Same company's No. 2 Thorne A, SW SE SE section 27-16-13w, had Siliceous lime at 3,400-31 feet, total depth, and was dry and abandoned.

Continental Oil Co. No. 8 Ainsworth A, NE cor. section 33-16-13w, found Siliceous lime at 3,405 feet, was bottomed at 3,450 feet, nothing was showing and it was abandoned.

Stanolind Oil & Gas Co. No. 8 Reimann, NE NE NW section 34-16-13w, had Siliceous lime at 3,414 feet, total depth 3,422 feet, was acidized and made potential of 833 bbls. of oil.

Same company's No. 9 Riemann, NE NW NW section 34-16-13w, was acidized and made potential of 1,729 bbls. of oil from Siliceous lime found at 3,402 feet, total depth 3,406 feet.

Estimated Daily Production

Estimated daily production of Kansas for the week ending November 13 and for the preceding week was as follows:

	Barrels	
	Nov. 13	Nov. 6
Oxford City	1,400	1,425
Burrton	13,725	11,650
Ritz-Canton	4,825	4,775
Graber	2,825	3,000
Hollow-Nikkel	2,475	2,300
Lerado	1,625	2,050
Voshell	2,350	2,200
Wellington	3,000	2,600
Ellsworth County:		
Lorraine	3,625	1,920
Other pools	1,330	1,230
Rice-Barton counties:		
Bloomer	4,475	2,150
Chase	8,025	6,125
Geneseo	2,475	2,075
Raymond	1,725	1,150
Silica	17,175	12,150
Keesling	1,400	1,000
Hauschild	2,100	1,475
Miscellaneous Rice	8,340	7,325
Miscellaneous Barton	8,480	6,220
Russell County:		
Fairport	1,830	2,285
Gorham	1,750	2,015
Russell	1,955	1,680
Sullivan	7,380	7,485
Trapp	13,965	12,905
Miscellaneous Russell	7,980	9,035
Sedgwick County:		
Valley Center	1,030	985
Miscellaneous	2,585	2,705
Ellis County:		
Bemis	4,975	4,900
Miscellaneous	3,015	2,775
Kingman County	605	560
Stafford County	3,745	2,490
Greenwood County	9,950	9,900
Butler County	16,350	16,075
Other fields	24,810	25,610
Total Kansas	193,300	174,225

Silica-Peter Area

Six wells were completed in the busy Silica-Peter-Ellinwood area of southeastern Barton County, as follows:

Stanolind Oil & Gas Co. No. 1 Shartz, NE SE NW section 2-20-11w, found Siliceous lime at 3,273 feet, total

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depth 3,289 feet, was acidized and made potential of 2,122 bbls. of oil.

Same company's No. 4 Kowalsky, SW SW NE section 11-20-11w, topped Siliceous lime at 3,275 feet, was bottomed at 3,285 feet, acidized and made potential of 1,932 bbls. of oil.

Lario Oil & Gas Co. and Atlantic Refining Co. completed No. 1 Bryant, SE cor. section 23-20-11w, at total depth of 3,265 feet and it made potential of 2,284 bbls. of oil from Siliceous lime topped at 3,257 feet.

Lario Oil & Gas Co. and Indian Territory Illuminating Oil Co. No. 2 Zahorsky A, SE NE NE section 23-20-11w, failed to find Siliceous lime and was abandoned when water intruded at 3,485 feet, total depth.

Indian Territory Illuminating Oil Co. No. 4 Sessler, SW cor. section 24-20-11w, had Siliceous lime at 3,254 feet, total depth 3,286 feet, and made potential of 1,889 bbls. of oil.

Same company's No. 6 Bryant, NE NE NW section 25-20-11w, made potential of 1,708 bbls. of oil from Siliceous lime topped at 3,251 feet, total depth 3,267 feet.

New work in Barton County: Lario Oil & Gas Co. and Atlantic Refining Co. No. 2 Bryant, NE SE SE section 23-20-11w, was rigging up rotary; Arvin No. 1, SW cor. section 1-20-11w, rig; Carter Oil Co. No. 2 Hogan, SE SW NW section 11-17-11w, rigging up rotary; Sinclair Prairie Oil Co. No. 1 Grossardt, NE NE SW section 10-17-11w, moving in tools; Armer & Vernon Oil & Gas Co. No. 4 Ainsworth, NE NW SE section 33-16-13w, spudded.

Russell County

Eight producers and one failure were recorded as completions in Russell County the past week. The failure was A. H. Witt No. 1 Baier, SE SW SE section 34-13-15w, which had Siliceous lime at 3,323 feet, total depth 3,336 feet, failed to uncover production by acidizing and was dry and abandoned.

National Refining Co. No. 3 Reinhardt D, SE NE NE section 19-14-14w, topped Kansas City lime at 3,005 feet, had pay at 3,045 feet, was bottomed at 3,055 feet and was rated potentially at 1,698 bbls. of oil.

Texas Co. No. 4 Brandenberg, NW SW NW section 20-14-14w, found Kansas City lime at 3,012 feet, total depth 3,031 feet, was acidized and made potential of 1,764 bbls. of oil.

Stanolind Oil & Gas Co. No. 22 Mermis, NW SE NE section 5-14-15w, had Kansas City lime at 3,040 feet, pay 3,058 feet, total depth 3,086 feet, was acidized, pumped 136 bbls. of oil and 43 bbls. of water the first four hours, 131 bbls. of oil and 5 bbls. of water the next four hours and made potential of 786 bbls. of oil.

Transwestern Oil Co. No. 10 Helen Polcyn, SE NW SE section 10-14-15w, found Gorham sand at 3,259 feet, was bottomed at 3,261 feet, pumped 117 bbls. of oil in four hours, making potential of 1,105 bbls.

Hartman & Blair No. 7 Harbaugh, SW NE SW section 25-14-15w, had Gorham sand at 3,174-84 feet, total depth, and was completed for potential of 1,898 bbls. of oil.

Carter Oil Co. No. 7 Detrich, SE SW SE section 8-15-13w, topped Siliceous lime at 3,306 feet, total depth 3,310 feet, pumped 91 bbls. of oil in six hours, was acidized and made potential of 371 bbls. of oil.

Same company's No. 8 Detrich, NE SE SW section 8-15-13w, pumped 454 bbls. of oil in eight hours, was acidized and made potential of 1,944 bbls. of oil. It had Siliceous lime at 3,168-74 feet, total depth.

Coralena Oil Co. No. 7 Hank Sellens, NW NE NW section 30-15-13w, had Siliceous lime at 3,312-14 feet, total depth, was acidized and made potential of 1,544 bbls. of oil.

First reports of new activity in Russell County: Cities Service Oil Co. No. 1 Titel, SE SE SW section 12-15-14w, rig; Transwestern Oil Co. No. 12 William Polcyn, SE NE SW section 11-14-15w, rig; J. C. Shaffer No. 4 Cramm, NE NW SE section 11-14-15w, rigging up rotary; Central Petroleum Co. No. 1 Boxberger, SW SE SE section 26-14-14w, rig; Cities Service Oil Co. No. 3 Rogg, SW SE NE section 27-14-13w, rig; Phillips Petroleum Co. No. 2 Wineteer, NW NW SE section 9-13-14w, location; H. W. Neuschwanger No. 1 Ginther, NW SW NE section 19-12-15w, machine.

Rice County

The largest producer to be completed in Kansas the past week was in Rice County, at Gulf Oil Corp. No. 1 Stout, NE cor. section 6-18-10w, in the Habiger-Stumps district, southeast of the Bloomer field. It topped Kansas City lime at 2,945 feet, total depth 3,024 feet, was acidized with 3,000 gallons and flowed 674 bbls. of oil in four hours. It was reacidized with 5,000 gallons, flowed

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1,075 bbls. of oil in four hours and made potential of 5,144 bbls.

Bridgeport Machine Co. and others No. 8 Habiger, SW NW NW section 5-18-10w, topped Kansas City lime at 2,932 feet, total depth 3,015 feet, acidized, pumped 699 bbls. of oil in four hours and made potential of 3,701 bbls. of oil, with 35,500,000 feet of gas.

Shell Petroleum Corp. No. 4 Hathaway, SW SW NE section 33-19-10w, Silica district, had Siliceous lime at 3,295 feet, was bottomed at 3,306 feet, swabbed 222 bbls. of oil in six hours, was acidized, pumped 292 bbls. of oil in four hours and made potential of 1,735 bbls.

Stanolind Oil & Gas Co. No. 6 Hathaway, SE NE SW section 33-19-10w, was an abandoned location.

Watchorn Oil & Gas Co. and others No. 1 Wenke, NE SW SE section 18-20-10w, topped Conglomerate at 3,290 feet and was dry and abandoned at 3,424 feet, total depth.

Sinclair Prairie Oil Co. No. 1 Ramsey, SW cor. section 7-21-6w, East Hauschild area, topped Conglomerate at 3,470 feet, was bottomed at 3,476 feet and made potential of 288 bbls. of oil.

Atlantic Refining Co. and associates No. 1 Patton E, NE NW SW section 5-21-7w, Saxman-Theede district, made potential of 193 bbls. of oil from Conglomerate topped at 3,337 feet, total depth 3,352 feet.

Garden-Haines Oil Co. No. 2 Snyder, SW SW SE section 9-21-7w, found Conglomerate at 3,341 feet, total depth 3,379 feet, and made potential of 885 bbls. of oil.

Continental Oil Co. No. 1 Engelland, NE cor. section 13-21-7w, had Conglomerate at 3,458 feet, total depth 3,461 feet, and made potential of 241 bbls. of oil.

Two new operations in Rice County were reported. Continental Oil Co. No. 2 Warner, NW cor. section 6-19-7w, and same company's No. 1 Connery, SE cor. section 36-18-8w, were rigging up rotaries.

Ellis County

Completions of the week in Ellis County totaled seven, all producers. Lario Oil & Gas Co. No. 3 Romine, NW NW SW section 18-11-16w, had Siliceous lime at 3,339 feet, total depth 3,347 feet, and made potential of 2,173 bbls. of oil.

Republic Natural Gas Co. No. 5 Romine, SE NW NW section 18-11-16w, was acidized and made potential of 2,690 bbls. of oil from Siliceous lime topped at 3,298 feet, total depth 3,303 feet.

Cities Service Oil Co. No. 8 Bemis, NW NE SE section 21-11-17w, Bemis field, topped Siliceous lime at 3,369 feet, total depth 3,388 feet, and made potential of 2,428 bbls. of oil.

Magnolia Petroleum Co. No. 5 Johansen, NE SW NE section 22-11-17w, made potential of 2,036 bbls. of oil from Siliceous lime found at 3,435 feet, total depth 3,441 feet.

Deep Rock Oil Corp. No. 26 Baumer, NE SE NE section 27-11-17w, topped Siliceous lime at 3,388 feet, total depth 3,408 feet, was acidized and made potential of 3,028 bbls. of oil.

Margay Oil Co. No. 4 Bemis E, SE SW NW section 28-11-17w, made potential of 1,351 bbls. of oil after acid treatment and was completed at 3,478 feet, total depth. Top of Siliceous lime was 3,465 feet.

Wolf Creek Oil Co. No. 3 Bemis A, NE NE NW section 4-12-17w, found Siliceous lime at 3,557 feet, was bottomed at 3,568 feet, acidized and completed for potential of 1,328 bbls. of oil.

Operations in Ellis County reported for the first time: Continental Oil Co. No. 1 Baumrucker, NE NE SW section 25-14-16w, cellar; Shell Petroleum Corp. No. 1 Rumsey, NW cor. section 23-11-17w, rig; Cities Service Oil Co. No. 8 Johnson, SE NE NE section 22-11-17w, rig; Sinclair Prairie Oil Co. No. 1 Cress, NW SW SW section 18-11-16w, location.

Ness County

J. H. Carpenter and Oriental Oil Co. No. 1 Shiner, SW SW NE section 19-18-25w, Tenny area, Ness County, was acidized and completed for potential of 1,134 bbls. of oil. It found pay at 4,378 feet, was bottomed at 4,438 feet and plugged back to 4,399 feet.

Stafford County

Stanolind Oil & Gas Co. No. 13 Komarek, NW NE SE section 30-22-11w, in the Hudson pool (formerly Richardson pool) of Stafford County, made potential of 1,485 bbls. of oil from Siliceous lime topped at 3,533 feet and was completed at 3,558 feet, total depth.

Same company's No. 11 Komarek, SE NE NE section 30-22-11w, topped Siliceous lime at 3,567 feet, total depth 3,580 feet, was acidized and made potential of 1,064 bbls.

New work in Stafford County: Atlantic Refining Co. and Phillips Petroleum Co. No. 1 McNaughter, NW cor. section 27-24-13w, location; Stanolind Oil & Gas Co. and others No. 1 Ferris, SE SE NW section 23-24-11w, rig; same operator's No. 4 William Spangenburg, SW NW NW section 29-22-11w, rigging up rotary.

Ellsworth County

Phillips Petroleum Co. No. 5 Patzner, NW NE SW section 30-17-10w, Bloomer area, Ellsworth County, found Siliceous lime at 3,306 feet, was bottomed at 3,312 feet, pumped 63 bbls. of oil and 45 per cent water in four hours and was completed for potential of 380 bbls of oil.

Magnolia Petroleum Co. No. 5 Andrea, SW cor. section 7-17-10w, had dug cellar.

McPherson County

Continental Oil Co. and associates No. 2 Boechner, NW NE SE section 29-21-1w, Graber pool, McPherson County, found Hunton lime at 3,296 feet, total depth 3,331 feet, and after acid treatment made potential of 643 bbls. of oil.

E. B. Shawver No. 1 Kaige, NW cor. section 31-19-1w, was a rig. T. C. Johnson and Darby Petroleum Corp. No. 3 Shaw, NE NW SW section 21-19-1w, had dug cellar.

Harvey County

Darby Petroleum Corp. No. 2 Lehman, SE SW NW section 13-22-2w, Harvey County, found Hunton lime at 3,264 feet, total depth 3,274 feet, and was completed for potential of 921 bbls. of oil after acid treatment.

Reno County

Transwestern Oil Co. No. 1 Teten, NW NW SE section 12-23-4w, Burrton field, Reno County, topped Mississippi lime at 3,259 feet, total depth 3,262 feet, perforated casing, acidized and made potential of 1,383 bbls. of oil.

Albert Jones and others No. 1 Shepherd, NW cor. section 22-26-9w, topped Kansas City lime at 3,360 feet, Viola 4,150-53 feet, plugged back to 3,587 feet, swabbed 50 bbls. of oil and 100 bbls. of water and was abandoned.

Davis No. 1 Welsh, C SW SE section 4-24-4w, was a rig. A. Austin No. 1 Schwiethale, SW SW NE section 17-23-10w, was moving in rotary tools.

Butler County

Polhamus No. 1 Leon State Bank, SE cor. section 32-27-7, Butler County, had Bartlesville sand at 2,762-88 feet, total depth, and made potential of 50 bbls. of oil, with 25 bbls. of water.

Saco Oil Co. No. 1 Barnhill, SE SW NE section 12-27-7, was a location.

Woodson County

Ward McGinnis No. 6 Weidle, NE NW SE section 31-23-15, Weidle area, Woodson County, was completed as a 15-bbl. pumper in Mississippi lime topped at 1,552 feet, total depth 1,580 feet.

Chris L. Sheedy and associates No. 9 Klick, SW SE SW section 20-25-14, topped Bartlesville sand at 1,402 feet, total depth 1,436 feet, was shot and pumped 15 bbls. of oil daily.

First reports of new activity in Woodson County: Chris L. Sheedy No. 4 Enloe, NW SW NE section 28-25-14, drilling at 500 feet; Harris and others No. 1 Weede, NW SE section 17-25-14, drilling below 350 feet; F. Young No. 2 Mudge, SE NW NE section 5-24-14, spudded.

Elk County

Denton & Morrow No. 9 Burke, NW SW SW section 34-29-10, Dunkleberger area, Elk County, found Kansas City lime at 1,250 feet, total depth 1,392 feet, was shot and pumped 25 bbls. of oil daily.

Elk Petroleum Co. No. 10 Cory, SW SW SE section 9-30-9, Bush-Denton district, had Mississippi lime at 2,552-70 feet, total depth, was acidized and shot, and pumped 25 bbls. of oil daily.

W. H. Jones and others No. 7 Walker, CWL NW SE section 5-31-10, had Mississippi lime at 2,203-23 feet, total depth, and was completed as a 15-bbl. pumper after acid treatment.

Veeder Supply & Development Co. No. 4 Douglass, CSL SW NW section 28-28-12, was bottomed at 1,141 feet, acidized and pumped 15 bbls. of oil daily.

Cowley County

Winkler & Koch No. 3 Ferguson, NE NE NW section 28-30-8, Cowley County, was treated with acid but was dry and abandoned at 2,196 feet, total depth. Top of Kansas City lime was 2,172 feet.

New work in Cowley County: C. E. Roth No. 1 Fry, NW SW SW section 8-31-8e, machine; Phillips Petroleum Co. No. 1 Starkey, NW NE SE section 16-30-4e, location; A. Brewer No. 2 Starkey, SE SE NE section 16-30-4e, moving in material.

Chautauqua County

C. E. Roth No. 1 Gwinn, C E half SE NE section 10-35-12, Chautauqua County, had Mississippi lime at 1,725 feet, Siliceous lime 2,035-38 feet, total depth, the hole filled with water and it was abandoned.

Barber County

Barbara Oil Co. No. 1 Holmes A, C SE section 28-33-13w, South Medicine Lodge area, Barber County, had Misener sand at 4,925 feet, Viola lime 4,937 feet, Wilcox sand 5,068-69 feet, total depth, sand tasted salty, it was plugged back to 4,989 feet and completed for an estimated 4,000,000 feet of gas.

Helmerich & Payne No. 1 Winters, NW NW SW section 16-32-10w, had dug cellar.

Scott County

Atlantic Refining Co. completed another producer in the Shallow Water pool of Scott County at No. 2 Pyle, C NW SE section 14-20-33w. Top of Mississippi lime was 4,621 feet, total depth 4,687 feet, and after shooting and acidizing, it made potential of 1,140 bbls. of oil.

Stevens County

Panhandle Eastern Pipe Line Co. No. 1 Parsons, C NW section 3-31-37w, Hugoton district, Stevens County, was bottomed at 2,796 feet, acidized and produced 7,000,000 feet of gas.

Same operator's No. 1 Morgan, C NW section 35-33-39w, was completed for 11,000,000 feet of gas at 2,710 feet, total depth.

Benedum-Trees Oil Co. No. 1 Mitchell, C NW section 2-35-38w, was bottomed at 2,840 feet, and produced 5,500,000 feet of gas, completed.

Panhandle Eastern Pipe Line Co. No. 1-9 Parsons, C section 9-31-37w, was a location.

Other First Reports

In Grant County, Columbia Fuel Co. No. 1 Hall, C section 33-28-36w, was moving in rotary tools. R. H. Wilson No. 1-18 Brenham, C section 18-28-37w, was drilling at 1,200 feet.

In Greenwood County, Weidman, No. 1 Lewis, SW SW NE section 25-27-8, had dug cellar and pits.

In Marion County, Palmer and others No. 1 Matz, wildcat, was moving in material.

In Pratt County, Skelly Oil Co. and associates No. 1 Lunt, C section 18-28-11w, was a location.

In Rooks County, Ross Oil Co. and others No. 1, NE NE NW section 5-10-17w, was a location.

In Sedgwick County, Talbott and others No. 2 Down Estate, C SE NW section 32-28-2e, had dug cellar.

In Sumner County, Phillips Petroleum Co. and others No. 1 Patton, C NE NE section 20-33-2e, was a location.

California Fields

(Continued from Page 86)

Vanguard Oil Co. has completed No. 15 Baker in section 33-27-28, pumping 479 bbls. of clean 16.2-gravity oil per day from 1,758 feet.

In the Midway-Sunset field Honolulu Oil Corp. No. 26-A in section 14-32-24 has been completed pumping 220 bbls. of clean 27.1-gravity oil daily from 3,220 feet and Hallmark Oil Co. No. 8 in section 25-12-24 was completed early in the week pumping 298 bbls. of clean 22.8-gravity oil per day from 2,800 feet. Otis Hoyt No. 7 in section 7-11-23 has been completed pumping 124 bbls. of 13.5-gravity oil cutting 4 per cent daily from 1,844 feet after the hole had been finished with 242 feet of 4¾-inch liner including 214 feet of 275-mesh screen.

In the Lost Hills field the Texas Co. has completed No. 2-27 Theta in section 2-26-20 pumping 60 bbls. of 14.5-gravity oil cutting 4 per cent daily from 1,134 feet. This company has temporarily solved the water problem that has caused operators a lot of worry, by completing No. 2-27 Theta in the uppermost part of the oil zone. Out in the West Front section of the Kern River field the Texas Co. completed No. 11 Lehman pumping 110 bbls. of relatively clean 14.9-gravity oil daily from 2,057 feet after the hole had been finished with 489 feet of 5¾-inch liner including 289 feet of perforated landed at 2,052 feet.

North Louisiana, Arkansas

FLOW METERS IN LOUISIANA WILL CHECK OIL MOVEMENTS

SHREVEPORT, La., Nov. 10.—The Louisiana Department of Conservation has issued a new state-wide order requiring the installation of flow meters on all oil movements in and out of the state of Louisiana. The purpose of this move is to provide the commission with a closer check on all oil movements, including that produced from each pool, oil entering the state, shipments out of the state, oil refined or processed in the state and oil stored in the state.

Notice for the installation of the meters within 90 days has been sent to all oil operators of oil pipe lines, gathering systems, railroad loading terminals, tank-wagon or truck-loading terminals, barge-loading terminals, tanker-loading terminals, storage tanks, storage tankers and refineries within the state.

Plans for this move have been under way for several months. It has been reported that the system may even be extended to individual leases within pools at a later date.

The Arkansas board of conservation, headed by O. C. Bailey as chairman, Saturday announced postponement of any proration for the Rodessa field until December 1. The decision of the board came at a meeting Saturday morning, held to consider testimony of a proration hearing on the area Friday.

Whether present order fixing yield of area at 10,000 bbls. daily would be established December 1, or a new schedule made, could not be learned.

Two locations made by the Tide Water Associated Oil Co. in the Homer field, Claiborne Parish, at No. 15 Garrett, section 18-21-7, and No. 16, section 17-21-7, will be used in a repressuring project of their production in that area, it is reported.

It will be the first repressuring for the area. Another major company started a project of repressuring but did not complete it.

East Texas Refining Co. was reported Friday laying vacuum lines for its new casinghead gasoline plant to be constructed in the Miller County section of the Rodessa field.

Casinghead gasoline moved this week from the Rodessa district was reported at 1,688,903 gallons.

Lisbon Field Runs

Pipe line runs from the Lisbon district of Claiborne and Lincoln parishes were still approximately 2,500 bbls. under the field's allowable production of 10,000 bbls. daily.

Caddo Pipe Line Co., just completing a line into the area, is holding its runs at present to 75 per cent of the quota of wells to which it is connected, or purchasing a total of about 5,000 bbls. daily.

The firm is making its purchases on the eastern side of the field, through laterals No. 3 and No. 4 it obtained from the Gulf.

The Gulf, which before completion of the Caddo line was taking 5,000 bbls. daily from the field, has also reduced its runs from wells it is now connected to 75 per cent of their allowable. This makes the Gulf purchases now run about 2,500 bbls. daily.

For the past several days Caddo has stored purchases in two 10,000-bbl. tanks in the field. It started runs Friday through its line to the Arkansas Fuel Oil Co. Shreveport system for pumping on to the Rodessa Oil & Refining Co. plant at Cedar Grove.

RODESSA

Daily average production for the tristate Rodessa field last week was 82,544 bbls., of which Arkansas showed 13,121 bbls.; Louisiana 43,146 bbls. and Texas 26,277 bbls. Number of producing wells on the Arkansas side, 40; Louisiana side, 421; Texas side, 365.

Rodessa, Arkansas, Completions

F. W. Burford No. 1-E A. A. Capps, section 13-20-28, flowed 197 bbls. in 17 hours through 1-inch tubing choke after using 1,000 gallons of acid. Total depth 6,020 feet.

H. L. Hunt No. 4 Womack, section 10-20-28, flowed 10 bbls. hourly after testing with 4,000 gallons of acid through half-inch tubing choke, total depth 6,086 feet.

Rodessa, Louisiana, Completions

F. W. Burford No. 1 Pitts, section 1-23-16, gauged 13,400,000 feet of gas daily, open flow. Total depth 6,010 feet. The same operator's No. 1 R. A. Terry, section 2-23-16, flowed 1,175 bbls. in 18 hours through 1-inch tubing choke, total depth 6,042 feet.

G. H. Vaughn No. 1 Yates, section 2-23-16, flowed 1,100 bbls. daily on initial test through open tubing, total depth 5,997 feet.

Rodessa, Texas, Completions

Union Producing Co. No. 2 Thrower Unit, J. S. Smith Survey, Cass County, flowed 10 bbls. hourly through three-eighths inch tubing choke, total depth 5,933 feet.

Union Producing Co. No. 3 Hutchinson, A. D. S. Coy Survey, Marion County, flowed 157 bbls. daily on initial test, total depth 6,091 feet. The same operator's No. 4 Hutchinson, Marion County, same survey, produced 41 bbls. daily on 11/64-inch tubibng choke on initial test, total depth 6,145 feet.

LOUISIANA

Caddo Parish

W. D. Flynn No. 2 Natalie, section 10-21-16, pumped 5 bbls. daily and considerable salt water on initial test, total depth 1,023 feet.

Magnolia Petroleum Co. No. 27 Robertshaw, section 23-21-15, pumped 100 bbls. daily after a 3,000-gallon acid treatment, total depth 1,640 feet.

Stanolind Oil & Gas Co. No. 130 Dillon Heirs, section 13-21-15, pumped 75 bbls. daily after a 1,500-gallon acid treatment, total depth 1,700 feet.

Claiborne Parish—Lisbon

E. W. Gill and others No. 1 English, section 29-21-4, flowed 160 bbls. in 5½ hours through 12/64-inch tubing choke on initial test, no acid used. Total depth 5,150 feet.

The Sloan & Zook Co. No. 4 H. W. and M. Patton Estate, section 1-20-5, flowed 10 bbls. hourly through three-fourths inch tubing choke after using 3,000 gallons of acid, total depth 5,292 feet.

The Gulf Refining Co. announced November 6 that its Lisbon purchases would be a maximum of 2,000 bbls. daily. The Caddo Pipe Line Co. announced it would purchase 4,898 bbls. daily. The Conservation Department's allowable for the field for November is 10,000 bbls. daily, so it seems if the above procedure, if carried out, there will be a distressed condition in the Lisbon field.

Red River Parish

Jones and others No. 1 Marston, section 14-13-11, pumped 5 bbls. oil and 75 bbls. salt water daily on initial test, total depth 2,547 feet.

Webster Parish

Another deep gas-distillate producer for the Ohio Oil Co., No. 1 S. P. D. Coyle and W. Cox, Cotton Valley field, section 23-21-10, produced 170 bbls. distillate in 13 hours and estimated 3,000,000 feet of gas daily through five-sixteenths inch tubing choke, total depth 8,119 feet.

Oliphant and others No. Banks, section 34-21-10, produced 288 bbls. distillate daily and estimated 3,000,000 feet of gas daily through 1/64-inch tubing choke, total depth 8,187 feet.

Union Parish

Interstate Natural Gas Co. No. 77 fee, section 31-21-4, gauged 27,000,000 feet of gas daily, rock pressure 750 pounds, total depth 2,150 feet.

Southern Carbon Co. No. 70 fee, section 5-20-4e, gauged 5,000,000 feet of gas daily, rock pressure 710 pounds, total depth 2,183 feet.

Union Producing Co. No. 1 Jordan, section 11-21-3, gauged 3,000,000 feet of gas daily, rock pressure 1,020 pounds, total depth 2,198 feet.

Columbia County, Arkansas

Standard Oil Co. of Louisiana continued to deepen its J. P. McKean, section 8-16-22, cored from 7,259 feet to 7,309 feet, all cores lime and oil stained, however the last two cores were hard and tight. Swabbing will be continued at this depth.

Estimated Daily Production

Estimated daily gross production all companies week ending November 12, 1937:

NORTH LOUISIANA

Bellevue	845
Caddo light	3,950
Caddo heavy	2,710
Converse	640
Cotton Valley heavy	370
Cotton Valley light	*3,930
De Soto and Red River	1,470
Elm Grove	400
Haynesville	3,010
Holly	90
Homer	2,435
Lisbon	2,810
Pleasant Hill	120
Rodessa	43,145
Sarepta-Carterville	305
Sligo	150
Sugar Creek	360
Urania	2,725
Zwolle	635
Total	70,100

SOUTH ARKANSAS

Champagnolle	1,310
El Dorado	1,935
Lisbon	280
Miller County	450
Nevada	740
Rodessa	13,120
Schuler	4,525
Smackover light	2,095
Smackover heavy	16,785
Stephens	580
Troy	1,100
Urbana	1,225
Total	44,145

Texas side of Rodessa field 26,275 bbls. daily.

*3,450 bbls. is distillate.

N. Y.-Penna. Gas Fields

(Continued from Page 79)

kany at 5,227 feet. It had an initial rock pressure of 915 pounds.

Pennsylvania Operations

Four of the current Potter County operations are shut down, three are drilling and operations have yet to begin on the location staked some time ago by G. L. Cabot, Inc., on the Orwin & Carlson farm in Wharton Township.

Wells shut down are Potter Development Co. at 6,062 feet on the Crawford farm, Keating Township; P.P.&L. Co. at 4,970 feet on the G. M. Whitman farm, Harrison Township; New York State Natural Gas Co. at 2,300 feet on the No. 2 A. Schofield farm and French and others at 400 feet on the Mary Webster farm, Genesee Township.

Potter Development Co. is drilling by tools on the

Haupt farm, in West Branch Township, and is now down 5,674 feet; New York State Natural Gas Co. is drilling at 2,300 feet on the A. D. Marble farm and Ward Wasson at 2,985 feet on the R. B. Hall farm in Genessee Township.

Only one of the four Warren County tests is shut down at present, Kane Industrial Gas Co. at 4,435 feet on Lot 515, Watson Township. Updegraff is drilling at 4,700 feet on the O. E. Erickson farm, Elk Township; Evjen and others at 3,740 feet on the Dusenberry farm, Watson Township, and Belmont Quadrangle Drilling Co. at 2,750 feet on Lot 487, Pleasant Township.

New York Operations

Three of fifteen Woodhull field operations are now in the Onondaga limestone which overlies the Oriskany. Belmont Quadrangle Drilling Co. is shut down at 4,017 feet on the L. S. Johnson farm. Hanley & Bird are running casing in their well on the J. Lobeck farm, drilled to 4,100 feet, and Cunningham Natural Gas Co. is shut down at 3,958 feet. The Hanley & Bird well topped the Onondaga at 4,072 feet and the Cunningham well, at 3,934 feet.

The status of other Woodhull operations according to the latest report follows:

Williamsport Oil & Gas Co. shut down at 2,400 feet on the Della Lampson farm.

Southwestern Development Co., location on the J. Seeley farm; drilling at 795 feet on the E. G. Husted farm and drilling at 360 feet on the Earl Brown farm.

New York State Natural Gas Co., drilling at 930 feet on the Chester L. Bonham farm and at 460 feet on the Charles Finch farm.

Hanley & Bird, drilling at 2,305 feet on the E. H. Ackerman No. 1 farm.

J. Becker, drilling at 1,700 feet on the Fred Sly farm.

Belmont Quadrangle Drilling Co., building rig on the John Allen farm.

Sylvania Corp., drilling at 405 feet on the John Allen farm and at 610 feet on the E. G. Husted farm.

Chancy and others, rig up on the M. Hargraves farm.

Southwestern Development Co. is drilling at 5,697 feet in the old hole on the Federal Land Bank farm in Montour Township, Schuyler County.

Preparations are under way for a pair of tests in Allegany County, Southwestern Development Co. is building the rig on the Johnson Estate farm in Willing Township and Empire Producing Co. is moving material in to a location on the Della Mulvey farm, Alma Township.

Eastern Fields

(Continued from Page 76)

from 2,365 feet to the brown shale 2,895-3,495 feet and it is good for 300,000 feet a day.

In Marshall County. F. J. Watson completed No. 4 Joseph Loudenslager in the Cameron district at 3,205 feet, with 150,000 feet of gas at 3,202 feet.

In Wirt County, Septer W. Douglass completed the test on the Anna C. Tucker farm in Spring Creek district in the Injun sand at 1,581 feet and it is good for 134,000 feet a day. In Ritchie County, W. A. Bickerstaff drilled No. 1 Thomas Fordham through the Injun sand to 2,024 feet and it was dry.

In Wayne County, G. T. and Guy B. Ray completed the test on the Asa Smith farm in Union district at 3,399 feet, with brown shale at 2,775-3,398 feet and 350,000 feet of gas at 3,100, 3,360, and 3,375 feet.

Oriskany Gas Field

Seven wells were completed in the Coopers Creek field in Kanawha County and they included some very fair wells. In Poca district, United Carbon Co.'s Mona Bostic test found top of the Oriskany at 4,744 feet with gas gauging 16,500,000 feet a day from 4,784-97 feet. It was not shot.

In the Poca district, United Guel Gas Co. No. 4756 Ray topped the Oriskany at 4,853 feet with 11,159,000 feet of gas at 4,863-65 feet. Same company's No. 4759 Lizzie Sisson topped Oriskany at 4,781 feet with 15,000,000 feet of gas at 4,782-84 feet. Same company's No. 4757 Fisher and others topped Oriskany at 4,740 feet with 9,971,000 feet of gas at 4,744-50 feet.

The Spartan Gas Co. No. 2 Susan Legg and others in Poca district gauged 10,318,000 feet a day from the Oriskany sand, total depth 5,008 feet. In this district, Columbian Carbon Co. is completing the Mary Fisher test with the top of the Oriskany sand at 4,937 feet and 1,900,000 feet of gas showing at 4,963 feet.

In Poca district, Glen Oil & Gas Co. topped Oriskany at 5,258 feet on the James A. Haynes farm and at 5,307 feet it showed only 116,000 feet of gas. After the shot, the gauge was 591,000 feet. It appears to define the northeast limits.

In Poca district, United Fuel Gas Co. topped the Corniferous lime at 4,728 feet on the C. T. Tolley farm. Lima Gas Co. topped Corniferous at 5,026 feet in the Letha Moss test. B. E. Andree reacidized that formation at 4,627 feet on the F. M. Ray farm. Godfrey L. Cabot, Inc., reached the Corniferous lime at 4,678 feet on the Katherine B. Jarrett farm. In Union district, Mullins Gas Co. reached the Corniferous at 4,825 feet on the Sarah S. Dawley farm. Six other wells are drilling in this district.

Deep Tests

In Wirt County, Carnegie Natural Gas Co. has reached 4,365 feet on the W. O. Caplinger farm in Tucker district. In Tygart district, W. H. Bickel is down 4,494 feet on the Reese Blizzard farm. In Steel district, Wood County, Belmont Quadrangle Co. is drilling at 2,240 feet on the C. D. White farm.

In Jackson County, United Carbon Co. will plug No. 2 Perkins in Washington district with 4,200 feet of salt water from the Oriskany sand in the hole. No. 1 on this farm has cleared the bailer from the hole and is drilling at 5,060 feet. In Ripley district, Potter Development Co. started drilling on the William T. Chancey farm on Mill Creek. The elevation is 633 feet. In Ravenswood district, W. H. Petry is shut down at 4,170 feet on the D. O. Curry farm.

In Roane County, Ohio Valley Gas Co. is drilling at 5,334 feet on the M. C. Larch farm in Harper district or 80 feet in the Corniferous lime. It is a 5-inch hole and it is hard drilling in this formation.

In Clay County, Pittsburgh and West Virginia Gas Co. test on the Jesse Chapman farm in Otter district is drilling at 2,185 feet. There was some oil at 2,080 feet.

In Boone County, Owens Illinois Glass Co. is down 5,220 feet in the No. 32 Petonia Coal Land Co. in Sherman district and fishing for the tools.

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Rocky Mountain Area

By T. R. INGRAM

OIL FLOW INCREASES WHEN VACUUM WILDCAT DEEPENED

DENVER, Colo., Nov. 15.—The Berthoud field, Larimer County, Colorado, may be slightly extended on the east by the Great West Oil & Gas Corp. No. 1 Haworth, which promises to make a small well in the Muddy. One well was abandoned in Morgan County in Swisher and others No. 1 Lunt. Location was released for a test of the Trull anticline in Routt County by L. E. Craig and E. L. Moore.

The Murphy Oil Co. completed an average well on the Quealy dome, Wyoming, in its No. 10 Holst. The Sinclair-Wyoming Oil Co. No. 2-C Muskrat, Fremont County, looks like a big gas well. Stanolind Oil & Gas Co. released locations for three more Tensleep wells in Salt Creek. The Ohio Oil Co. completed an 850-bbl. well in Lance Creek in its No. 9 Putnam in the Sundance.

Three wells were completed in Cut Bank field in Montana, two not tested and third a dry hole. Kevin-Sunburst had four completions and three new operations.

NEW MEXICO

Increases in oil showings were logged during the past week at the Texas Co. No. 1-L State, C SW NE section 1-18-34, outpost 3 miles south of nearest production in the old Vacuum pool of Lea County, as it drilled to 4,400 feet in lime. It tanked 263 bbls. of oil in 12 hours, with the oil flow accompanied by several million feet of gas. The well started spraying oil at 4,297 feet, top of first pay, with oil increasing as it went deeper. It is 50 feet higher structurally than the highest of the three wells in the Vacuum pool, and has not yet drilled into the heavy lower pay which yielded 51 bbls. of oil an hour naturally in Magnolia Petroleum Co. No. 2 State-Bridges, farthest southwest well in the area. The new well is nearly 20 miles southwest of the town of Lovington.

Additional impetus was given to exploration of the Vacuum area when Skelly Oil Co. staked location the past week for No. 1-J State, C NE NW section 31-17-35. It is three-fourths mile north and a similar distance east of the Texas Co. well.

Eastern Eddy County shared in the oil interest of the week, as R. A. Shugart No. 1 Coulthard, C NW SW section 35-18-31, wildcat in the old Maljamar district, drilled 27 feet of saturated pay from 3,440 to 3,467 feet, total depth. Oil rose 3,000 feet in the hole, was swabbed down and oil again rose 400 feet in 14 hours. The oil is sweet and tests 37.2-degrees gravity. Operators were cleaning out and testing.

A big natural flowing well was completed in the South Eunice area at Cities Service Oil Co. No. 7-A Clossen, C W half SE NE section 6-22-36, which had pay at 3,775 feet and was bottomed at 3,830 feet. It flowed 250 bbls. of oil an hour through 3-inch tubing, and tested 4,000,000 feet of gas.

W. D. Murray and others No. 4 State Wallace, NW SW NW section 3-21-36, Eunice area, was completed at 3,840 feet, total depth, flowing 67 bbls. of oil daily after acid treatment.

Anderson-Prichard Oil Corp. No. 1 Gregory, C NE NW section 33-25-37, Jal sand area, was completed at total depth of 3,237 feet, flowing 10 bbls. of fluid daily, 70 per cent water.

Rowan Drilling Co. No. 1-B Elliott, C NE SW section 9-22-37, Penrose area, had initial production of 75 bbls. of oil daily after acidizing, and was completed at 3,747 feet, total depth.

Repollo Oil Co. No. 1 White, SE NE SE section 35-20-36, flowed 582 bbls. of oil in 14 hours after acidizing, and was completed at 3,860 feet, total depth.

Skelly Oil Co. No. 3 Ellen Sims, C SE SE section 3-23-37, Skelly sand area, was bottomed at 3,675 feet, had initial production of 90 bbls. of oil and was completed.

Humble Oil & Refining Co. No. 3 Williams, C SW NW section 34-24-37, Lea County, flowed 74 bbls. of oil in three hours and was completed at 3,532 feet, total depth.

Same company's No. 2 Fopeano, C SE NE section 35-20-36, topped first pay at 3,714 feet and was completed at 3,860 feet, total depth. After acid treatment, it flowed at the rate of 12 bbls. of oil an hour.

Skelly Oil Co. No. 2 Sticher, C NW SW section 4-22-37, Lea County, had pay at 3,693 feet, total depth 3,721 feet, was acidized, flowed 53 bbls. of oil in six hours and was a completion.

Completions in Eddy County included Premier Petroleum Corp. No. 1-E Parker, NW SW NE section 22-17-30, which flowed 340 bbls. of oil in 24 hours after acid treatment. Total depth is 3,423 feet.

Cities Service Oil Co. No. 1-J State, C S half SW section 16-17-30, Eddy County, swabbed 65 bbls. of oil daily and was completed at 3,287 feet, total depth.

Nash & Windfohr No. 4-A Stevens, C SW SW section 13-17-30, had initial production of 350 bbls. of oil daily and was completed at 3,425 feet, total depth. It is in Eddy County.

Lea County

Amerada Pet. Corp. No. 6 Byrd, SE sec. 12-20-36. Loc.
Amerada Pet. Corp. No. 2 Corrigan, C S½ SE NE sec. 4-22-37. Drk.
Amerada Pet. Corp. No. 1 Hare, C SW SW sec. 33-21-37. T.D. 3,760 ft.; pay 3,683 ft.; S.O.; to swab.
Amerada Pet. Corp. No. 3 Laughlin, C NW NE sec. 9-20-37. T.D. 2,585 ft.; set 8-in. 2,573 ft.
Amerada Pet. Corp. No. 1 Stuart, C W½ NW NW sec. 14-25-37. T.D. 3,424 ft.; swabbing.
Anderson-Prichard Oil Corp. No. 1 Wells, C SE SE sec. 5-27-37. Drlg. 3,575 ft.
Anderson-Prichard Oil Corp. No. 2 Langlie, SE sec. 8-25-37. T.D. 2,466 ft.; shot; C.O.
Anderson-Prichard Oil Corp. No. 3 Langlie, NE sec. 8-25-37. Drlg. 3,045 ft.
Bradley Oil Co. No. 1 Grizzell, C SW NE sec. 5-22-37. T.D. 3,737 ft.; spraying oil; run tubing.
Cities Service Oil Co. No. 8 Closson, C W½ NE sec. 6-22-36. Cellar and pits.
Cities Service Oil Co. No. 1-H State, C NE NE sec. 17-22-36. T.D. 3,884 ft.; prep. to deepen.
Cities Service Oil Co. No. 1-A Closson, C NE NE sec. 18-22-36. Wildcat; drlg. 3,247 ft.
Continental Oil Co. No. 1-B-6 Elliott, C NE SE sec. 6-22-37. Drlg. 3,715 ft.
Continental Oil Co. No. 2-B-6 Elliott, C NW SW sec. 6-22-37. T.D. 3,424 ft.; set 5½-in. csg. 3,416 ft.
Continental Oil Co. No. 3-B-6 Elliott, C SE SE sec. 6-22-37. Drlg. 3,480 ft.
Continental Oil Co. No. 1-B-10 Britt, SW sec. 10-20-37. T.D. 3,875 ft.; acidized; tested 1¾ bbls. fluid an hr. for 4½ hrs., 50 per cent water.
Continental Oil Co. No. 3-B-31 Lockhart, SE sec. 31-21-36. T.D. 3,779 ft.; W.O.C.
Continental Oil Co. No. 1-A Jack, C SW SW sec. 21-24-37. T.D. 3,272 ft.; set 5½-in. 3,772 ft.
Continental Oil Co. No. 1-B-24 Reed, C SE SW sec. 24-20-36. T.D. 3,737 ft.; set 5½-in. 3,734 ft.
Continental Oil Co. No. 2-B-24 Reed, SW sec. 24-20-36. T.D. 1,173 ft.; set 7⅝-in. 1,140 ft.
Continental Oil Co. No. 4-A-14 Sanderson, C NE SE sec. 14-20-36. Drlg. 3,834 ft.
Continental Oil Co. No. 5-A-14 Sanderson, NE NE NW sec. 14-20-36. T.D. 3,757 ft.; set 5½-in. 3,750 ft.
Continental Oil Co. No. 6-A-14 Sanderson, SE sec. 14-20-36. Drlg. 3,110 ft.
Continental Oil Co. No. 1-A-7 State, SE sec. 7-19-37. Drlg. 2,935 ft.
Continental Oil Co. No. 2-E-17 State, C NE SE sec. 17-22-36. Drk.
Continental Oil Co. No. 6-A-17 State, C NW NE sec. 17-19-37. T.D. 290 ft.; rng. csg.
Crandall, Osmond & Maxwell et al No. 1 Maxwell Permit, C SE SE sec. 2-11-36. Drlg. 4,040 ft.
Cranfill & Germany No. 1 Weir, C NE NE sec. 15-20-37. T.D. 4,210 ft.; S.D.O.
Culbertson & Irwin No. 3-A Humphrey, NE SW NE sec. 3-25-37. T.D. 3,433 ft.; est. 250 B.O.P.D.; to test.
Culbertson & Irwin No. 4-A Humphrey, NE SE NW sec. 3-25-37. Cellar and pits.
Eastland Oil Co. No. 1 Waldrop, C SE SE sec. 1-20-38. T.D. 120 ft.; R.U.R.
Emperor Oil Co. No. 1 Johns, C SW NW sec. 24-17-32. T.D. 4,245 ft.; F. 10 B.O.P.D., 5,000,000 ft. gas.
Empire O. & R. Co. No. 1-G State, sec. 2-21-36. T.D. 3,900 ft.; S.D.
Empire O. & R. Co. No. 2-B State, C SE SW sec. 2-21-37. Drlg. 3,850 ft.
J. E. Farrell No. 2-C Walden, C SE SW sec. 15-22-37. Drlg. 3,665 ft.
Grayburg Oil Co. No. 10 Burch, SE NE NE sec. 19-17-30. R.U. machine.
Gulf Oil Corp. No. 1 Boyd, sec. 23-22-37. T.D. 3,681 ft.; tstg.
Gulf Oil Corp. No. 2 Cole, C NE NE sec. 16-22-37. T.D. 1,141 ft.; S.D.
Gulf Oil Corp. No. 1 Elliott, SW SE SE sec. 15-25-37. Drlg. 3,380 ft.
Gulf Oil Corp. No. 1-E Janda-State, NE NW NE sec. 21-23-36. T.D. 2,959 ft.; set 7⅝-in. 2,952 ft.
Gulf Oil Corp. No. 1 LeMunyon, C NE NE sec. 28-23-37. Old well; rigging up to deepen.
Gulf Oil Corp. No. 1-B Stebbins, NE sec. 5-22-37. Drlg. 3,285 ft.
Gulf Oil Corp. No. 1 Felton, C SE SE sec. 28-21-36. T.D. 3,885 ft.; flwd. 150 bbls. fluid in 12 hrs., 4% wtr.; 9,000,000 ft. gas; pay 3,780 ft.; testing.
Gulf Oil Corp. No. 1-B Shipp, C NW SW sec. 8-19-37. T.D. 4,040 ft.; pay 3,925 ft.; acd.; F. 68 B.O. in 6 hrs.; may reacidize.
Gulf Oil Corp. No. 3 Stuart, C SE NE sec. 10-25-37. Drk.
Gulf Oil Corp. No. 1-B White, SE sec. 35-20-36. Drk.
Herschback Oil Co. No. 1 Alexander, C NE SW sec. 5-21-37. T.D. 3,760 ft.; shot; F. 32 B.O. in 8 hrs.
Herschback Oil Co. No. 1 Burleson, C E½ NE NW sec. 8-25-37. R.U.R.
Humble O. & R. Co. No. 3 Williams, C SW NW sec. 34-24-37. T.D. 3,532 ft.
Humble O. & R. Co. No. 3 Fopeano, C SW SW sec. 25-20-36. Cellar and pits.
Humble O. & R. Co. No. 2 Saunders, C NW NW sec. 9-22-34. Drlg. 4,125 ft.
Jal Nat. Gas Corp. No. 2 Justis, NE sec. 20-25-37. T.D. 3,029 ft.; tstg.
Carl B. King No. 1 Stuart, NW SW SW sec. 11-25-37. Drlg. 2,510 ft.
Landreth Prod. Co. No. 2 Grizzell, C SW NE sec. 8-22-37. T.D. 300 ft.; rng. csg.
Harry Leonard No. 4 Lanehard, SW NW NE sec. 21-25-37. M.I. machine.
Magnolia Pet. Co. No. 1 State G, NW NW NE sec. 34-17-34. T.D. 4,905 ft.; P.B. 4,794 ft.
Magnolia Pet. Co. No. 2 State-Bridges, sec. 14-17-34. T.D. 4,593 ft.; flw. 51 B.O. in 1 hr., naturally.
Magnolia Pet. Co. No. 3 State-Bridges, C SW SE sec. 23-17-34. T.D. 435 ft.; to set csg.
J. A. Mascho No. 1 Cloyd, C SE SE sec. 20-22-33, wildcat. Drlg. 3,362 ft.
McDonald & Weiner No. 1 Elliott, SE cor. sec. 19-21-37. T.D. 3,778 ft.; flwd. 120 B.O.P.D.; T.P. 3,755 ft.
C. T. McLaughlin No. 1 Polhamus, NE sec. 9-24-37. Drlg. 3,278 ft.
Mid-Continent Pet. Corp. No. 2 Boren, C SE NE sec. 20-22-36. T.D. 3,840 ft.; acd.; F. 24 B.O.P.D.; to deepen.
National Drlg. & Prod. Co. No. 1 Flint, C NE NE sec. 29-20-34. Wildcat; drlg. 3,653 ft.
Ohio Oil Co. No. 2 Grizzell, C NW SE sec. 5-22-37. T.D. 3,600 ft.; prep. to drill in.
Ohio Oil Co. No. 1 Hardy, NE NE SE sec. 20-21-37. Drlg. 3,260 ft.
Ohio Oil Co. No. 1 Kutter D, C SW SW sec. 18-19-37. Drlg. 3,535 ft.
Ohio Oil Co. No. 7 State-McDonald, C SW SE sec. 16-22-36. T.D. 3,871 ft.; C.O.
Lem Peters No. 1 Graham, sec. 27-22-37. Drlg. 380 ft.
Plains Prod. Co. No. 1 Humphreys, NE sec. 3-25-37. Loc.
Plains Prod. Co. No. 1 Stuart, NE SW SW sec. 10-25-37. T.D. 3,390 ft.; S.D. repairs.
Repollo Oil Co. No. 1 Carter, SW SE NE sec. 9-24-37. T.D. 3,787 ft.; P.B. 3,660 ft.; flw. 73 B.O. in 24 hrs.; testing.
Repollo Oil Co. No. 1 Powhatan Carter, SW SW NE sec. 9-24-37. R.U.R.
Repollo Oil Co. No. 3 Christmas, NW NW NE sec. 28-22-37. Drlg. 490 ft.
Repollo Oil Co. No. 1 Cowden, NE cor. sec. 31-23-37. Drlg. 3,722 ft.; flows by heads.
Repollo Oil Co. No. 3 Moseley, SW sec. 34-24-37. T.D. 1,340 ft.; set 8-in. 1,337 ft.
Repollo Oil Co. No. 4 Roach, NW NW SW sec. 21-20-37. T.D. 3,875 ft.; P.B. 3,860 ft.; swb. dry; to shoot.
Repollo Oil Co. No. 1-B State, NE NE NW sec. 7-22-36. R.U.R.
Repollo Oil Co. No. 1 Turner, sec. 29-21-37. Drlg. 2,685 ft.
Republic Prod. Co. No. 1 Davis, SW cor. sec. 34-23-36. T.D. 3,621 ft.; set 7-in. 3,572 ft.
Rowan Drlg. Co. No. 2 Elliott B, C NW NW sec. 9-22-37. Drlg. 2,075 ft.
Rowan Drlg. Co. No. 2-A Elliott, C NE SW sec. 27-22-37. Drk.
Rushwold Oil Co. No. 1 Mattix, NE sec. 10-24-37. Cellar and pits.
Samedan Oil Co. No. 3 Hughes, sec. 4-23-27. T.D. 3,631 ft.
Samedan Oil Co. No. 4 Hughes, C NW SE sec. 10-23-37. Drlg. 2,885 ft.
Shell Pet. Corp. No. 3 Black, SE SE SW sec. 21-24-37. Drlg. 3,372 ft.
Shell Pet. Corp. and Devonian Oil Co. No. 3 Christmas, C SW NE sec. 21-22-36. T.D. 3,855 ft.; P.B. 3,840 ft.; W.O.C.
Shell Pet. Corp. No. 2 Rinewalt, NW sec. 4-22-37. T.D. 3,610 ft.; set 7-in. csg.
Shell Pet. Corp. No. 4-E State, C SW NW sec. 12-20-36. Drlg. 3,777 ft.
Skelly Oil Co. No. 1-J State, C NE NW sec. 31-17-35. Loc.
Skelly Oil Co. No. 5 J. B. Baker, C SE NW sec. 27-22-37. T.D. 3,620 ft.; tstg.
Skelly Oil Co. No. 1 Combest, NW NW SE sec. 27-23-36. T.D. 3,636 ft.; rng. at 3,500 ft.
Skelly Oil Co. No. 1 E. T. Johns, SW sec. 21-24-37. R.U.R.
Skelly Oil Co. No. 2 Mon-State, C NE SE sec. 13-19-36. T.D. 3,305 ft.; S.D.; repairs.
Skelly Oil Co. No. 3 G. W. Sims, C NW NE sec. 9-23-37. T.D. 3,642 ft.; C.O.
Skelly Oil Co. No. 1-C R. R. Sims, sec. 3-23-37. Drlg. 3,622 ft.
Skelly Oil Co. No. 1-E W. P. Sims, C NW NE sec. 10-23-37. T.D. 3,625 ft.; flw. 452 bbls. in 24 hrs.
Skelly Oil Co. No. 2 W. P. Sims, C SE NE sec. 10-23-37. Drlg. 2,720 ft.

Skelly Oil Co. No. 2 State H, C E½ NW NW sec. 25-20-36. T.D. 3,850 ft.; acd.; flwd. 462 B.O. in 12 hrs.
Stanolind O. & G. Co. No. 29-B Farnsworth, C SW NW sec. 7-26-37. T.D. 520 ft.; set 10¾-in. 510 ft.
Stanolind O. & G. Co. No. 10-A Gilluly, SE SE NE sec. 24-20-36. Drlg. 3,547 ft.
Stanolind O. & G. Co. No. 11-A Gilluly, C SW NE sec. 24-20-36. T.D. 3,770 ft.; drlg. plug.
Stanolind O. & G. Co. No. 2-A Langlie, C NW SW sec. 9-25-37. T.D. 3,463 ft.; swb. 48 B.O. in 8 hrs.; tstg.
Stanolind O. & G. Co. No. 1-A Hill, C NW SE sec. 6-21-37. R.U.R.
Stanolind O. & G. Co. No. 1-B Hill, NE sec. 6-21-37. T.D. 3,522 ft.; set 7-in. 3,506 ft.
Stanolind O. & G. Co. No. 2-B Langlie, C NW NW sec. 15-25-37. T.D. 3,458 ft.; P.B. 3,147 ft.; S.I.
Stanolind O. & G. Co. No. 2-A Myers, C SW SW sec. 15-24-37. M.I.M.
Stanolind O. & G. Co. No. 3-A Myers, C SW SE sec. 22-24-37. T.D. 3,410 ft.; set 5½-in. 3,277 ft.
Stanolind O. & G. Co. No. 1 State, C SE SE sec. 2-21-36. T.D. 3,854 ft.; flwd. 7½ B.O. in 24 hrs.; to pmp.
Stanolind O. & G. Co. No. 1 Thompson, NE sec. 6-21-27 Drk.
W. H. Street No. 2 Wood, C SW NE sec. 22-22-37. T.D 3,692 ft.; flwd. 44 B.O.P.D.; tbg.; S.D.O.
Texas Co. No. 1 American National, C NE NW sec. 18-19-37. M.I.R.
Texas Co. No. 2 Fristoe, NW NE NE sec. 3-25-37. T.D. 1,290 ft.; set 8¼-in. csg.
Texas Co. No. 2-B State, SE sec. 16-23-36. Drlg. 2,670 ft.
Texas Co. No. 6-C State, NE sec. 19-20-37. Drlg. 3,028 ft
Texas Co. No. 1-L State, C SW NE sec. 1-18-34. T.D. 4,385 ft.; flwd. 430 B.O. in 24 hrs.
Texas Co. No. 2 Falvy, C NW NW sec. 8-22-37. T.D. 3,500 ft.; set 7-in. csg.
Two States Oil Co. No. 1 Morris, SW SE SE sec. 21-18-38. Drlg. 3,215 ft.
Williams & Cockburn No. 3 Miller, C SW SW sec. 23-17-32. T.D. 3,880 ft.; swb. 20 B.O.P.D.

Eddy County

F. E. Baker No. 1 Eddy, NE sec. 12-22-27. Drlg. 450 ft.
Barnett Oil Dev. Co. No. 1 King Permit, C NW SE sec. 23-26-30. R.U. and S.D.
Fred Brainerd No. 2 Brainerd, sec. 5-18-27. T.D. 1,824 ft.; est. 35 B.O. in 3 days; to deepen.
Ed Bryant No. 1 Stebbins, C NE SW sec. 19-20-29. T.D. 1,000 ft.; S.D.O.
Carper Drlg. Co. No. 2 Gissler, SW SE NW sec. 23-17-30. T.D. 3,510 ft.; sulfur wtr.; may deepen.
Continental Oil Co. No. 1 Etz, C NW NE sec. 24-16-30. T.D. 3,745 ft.; P.B. 3,665 ft.; tstg.
Danciger O. & R. Co. No. 3 Turner, SW NE SW sec. 18-17-31. Drlg. 3,007 ft.
D. & B. Oil Co. No. 2 Jenkins, SW NW NW sec. 20-17-30. Drlg. 1,300 ft.
Emperor Oil Co. No. 3 Puckett, C NE NW sec. 24-17-31. T.D. 3,901 ft.; flwd. 50 B.O.P.D.; to deepen.
Etz Bros. No. 4 State, C S½ SE SE sec. 16-17-30. Drlg 2,200 ft.
Finley & Cherry No. 1 Buchley, C NW NW sec. 28-16-31. Wildcat; drlg. 2,850 ft.
Flint Prod. Co. No. 1-B State, SE sec. 20-17-30. Drlg. 3,800 ft.
Franklin Pet. Corp. No. 1 McIntyre, NE NW SW sec. 20-17-30. Drlg. 1,420 ft.
C. J. Frederick No. 1 Reed, C NE SW sec. 28-24-28. T.D. 620 ft.; set 8¼-in. csg.
F. W. & Y. Oil Co. No. 6-A Gissler, NE sec. 23-17-30. Drlg. 3,090 ft.
F. W. & Y. Oil Co. No. 7-A Gissler, NE sec. 23-17-30. Drlg. 3,101 ft.
F. W. & Y. Oil Co. No. 1-B Gissler, SW sec. 14-17-30. Loc.
F. W. & Y. Oil Co. No. 3 Jackson, C NW SE sec. 13-17-30. T.D. 2,953 ft.; fsg.
Geo. F. Getty, Inc., No. 1-E State, NE SW SW sec. 16-17-31. Drlg. 1,175 ft.
Grayburg Oil Co. No. 9 Burch, SW NE NE sec. 19-17-30 Drlg. 2,775 ft.
Grayburg Oil Co. No. 4 Keely, SE sec. 24-17-9. Loc.
M. A. Grisham No. 1 Chaytor, NE sec. 10-24-26. Drlg. 587 ft.
R. L. Holcomb No. 1 State, NW sec. 22-17-28. T.D. 455 ft.; S.D.
Woodworth Hawkins No. 1 Mack, C SW SW sec. 20-24-27. Drlg. 310 ft.
C. F. Ingram No. 1 Page, NE NE SW sec. 15-21-28. T.D. 1,310 ft.; S.D.O.
Nash-Windfohr & Brown No. 4-A Jackson, NE sec. 13-17-30. T.D. 3,541 ft.; shot; swb. 100 B.O.P.D.
Nash-Windfohr & Brown No. 5-A Jackson, NE sec. 13-17-30. Drlg. 3,125 ft.
Nash-Windfohr & Brown No. 6-A Jackson, SE sec. 13-17-30. Drlg. 2,980 ft.
Nash-Windfohr & Brown No. 7-A Jackson, SE sec. 13-17-30. Drlg. 3,045 ft.
Nash-Windfohr & Brown No. 2-B Stevens, NW sec. 13-17-30. Rig.
W. A. Nichols No. 1 Johnson, NE sec. 35-16-21. Wildcat; T.D. 3,697 ft.; pmp. 20 B.O.P.D.; top sd. 3,690 ft.; to deepen.
Repollo Oil Co. No. 2-D McIntyre, NW NE SW sec. 20-17-30. T.D. 3,280 ft.; drlg. by tools at 3,184 ft.
Repollo Oil Co. No. 3-D McIntyre, SE cor. sec. 17-17-30. Cellar and pits.
Repollo Oil Co. No. 1-A Parke, NW NE NE sec. 22-17-30. Drlg. 420 ft.
Repollo Oil Co. No. 2 West, SW SE SE sec. 9-17-31. T.D. 698 ft.; set 9-in. 695 ft.
Paul Sargent No. 1 State, NE sec. 16-17-31. T.D. 3,749 ft.; P.B. 3,745 ft.; tstg.
R. A. Shugart No. 1 Coulthard, C NW SW sec. 35-18-31. T.D. 3,467 ft.; hole kept bailed down; fills 400 ft. with oil in 14 hrs.; C.O.
W. O. Snyder No. 1 Pecos Irrigation, C NE SE sec. 15-25-28. T.D. 1,807 ft.; P.B. 1,780 ft.; drlg. 1,786 ft. in new hole.
Weiner & McDonald No. 1 Kerr, C SE NW sec. 3-24-29. T.D. 3,152 ft.; S.D.O.
Western Gas Co. No. 1 Cagle, C NW NW sec. 8-26-30. T.D. 3,534 ft.; R.U.S.T.

Chaves County

English & Hamon No. 11 Billingslea, SE sec. 9-15-29. T.D. 3,614 ft.; S.D.; repairs.
E. J. Fisher No. 1 Etz Permit, NE sec. 23-7s-26. Drlg. 60 ft.
Mathieson et al No. 1 Cole, C NE NW sec. 19-15-27. T.D. 830 ft.; U.R. 8¼-in. csg.

Curry County

Bond & Harrison No. 1 Hart ranch, C NW SE sec. 13-2n-31. T.D. 3,258 ft.; to pull 7-in. csg.

De Baca County

Land Owners Oil Co. No. 1 McAdoo, SW cor. sec. 16-1s-27e. O.W. prep. to deepen from 5,850 ft.

Dona Ana County

Juels C. Bertrand No. 1 Casad Permit, sec. 24-26-5e. T.D. 47 ft.; S.D.O.

McKinley County

S. Dysart No. 1 Govt., NE sec. 14-14-10w. T.D. 1,390 ft.; fsg.

Otero County

George Mulvey No. 1 State, SW cor. sec. 11-25-8. T.D. 263 ft.; S.D.
Fred Turner No. 1 Evans, NW NW SW sec. 22-25-12. O.W.D.D.; wildcat; T.D. 3,763 ft.; S.D.

Roosevelt County

C. S. Peterson and Conquistadores Oil Co. No. 1 Good, NW SE SE sec. 28-5s-30. Drlg. 360 ft.

NORTHWEST NEW MEXICO

Bernalillo County

Norins Realty Co., Inc., No. 2 North Albuquerque, NE SE NW sec. 19-11n-4e. S.D. 3,750 ft. for csg.

McKinley County

Guarantee Oil Co. No. 1 fee, NW NW NW sec. 31-20n-9w. S.D. 327 ft.
S. Dysart et al No. 1 Bouton, CEL NW NE sec. 14-14n-10w. T.D. 1,390 ft.; re-ran 12½-in. to 1,320 ft. and S.D.

San Juan County

The Continental Oil Co. No. 65 Rattlesnake, NE NW SE section 2-29n-19w, Rattlesnake pool, was plugged and abandoned at 904 feet.

Continental Oil Co. No. 66, SE NW NE sec. 2-29n-19w. Loc. (first report).
Jack Amenda No. 4 Hart, NW NE SW sec. 25-30n-12w. S.D. 2,048 ft.
Anna Oil Corp. No. 6 Govt., SW NE NE sec. 33-30n-11w. Drlg. below 1,000 ft.

Socorro County

Central New Mexico Oil Co. No. 1 Brown, SE NW sec. 16-3n-1e. Drlg. 1,250 ft.

Valencia County

C. A. Brober et al No. 1 Fuqua, NE NE sec. 19-5n-3e. S.D. 900 ft.; to chge. to rotary.
Big Three Oil Co. No. 1 Dailes Townsite, SE SE NW sec. 5-6n-1e. T.D. 6,001 ft.; cg. 5,970 ft. in new hole; S.G.

COLORADO

Adams County

Oklahoma Oil Co. No. 1 Baxter, C SW sec. 2-3s-66w. S.D. 4,555 ft.
Glenridge Oil Corp. No. 1 Hills, SE SE SE sec. 27-3s-64w. S.D. 4,345 ft.

Archuleta County

Prospect Oil Synd. No. 2 Lena M. Garnett, NW SW NE sec. 13-33n-2e. Drlg. in gravel 190 ft.; ran 168 ft. 12½-in.

Boulder County

J. B. Furstenberg No. 1 Foote, SE sec. 20-1n-70w. Drlg. 2,500 ft.
Boulder Prod. & Ref. Co. No. 11 Harlow Est., SE NE sec. 36-2n-71w. S.D.O. 765 ft.; dry in Muddy.

Garfield County

Roaring Fork Oil Co. No. 1 Patterson, C NE sec. 36-7s-88w. S.D. 570 ft.

Huerfano County

S. W. Pressey No. 1 Ojo, SW NE sec. 10-29s-69w. T.D. 3,550 ft.; cmtg. caves.
S. W. Pressey No. 2 Alamo, C SW SE sec. 3-27n-68w. Setting csg. at 450 ft.

Grand County

Interstate O. & R. Co. No. 1 Hinman, NE SE NW sec. 11-2n-81w. S.D. 2,230 ft.

Jackson County

Colorado Oil Ref. Co. No. 1 North Park Coal, NW NW sec. 18-9n-78w. S.D. 3,015 ft.

LaPlata County

N. Spatter No. 1 Bryce, SE SW SW sec. 31-33n-9w. Landed 10-in. at 800 ft.; drlg. ahead.

Larimer County

The Great West Oil & Gas Corp. No. 1 Haworth, half a mile east of the nearest producer in the Barthoud field, drilled to 3,880 feet and found water in the top of the Dakota. Hole was too small to continue on to the Sundance and it is plugging back to 3,863 feet to complete in the Muddy where the operators say it will make a small well.

Great West O. & G. Corp. No. 1 Haworth, C SW SE sec. 16-4n-69w. T.D. 3,880 ft.; P.B. to 3,863 ft.; prep. to test.
Consolidated Smelting & Metals Corp. No. 1 Hancock, NE NE SW sec. 7-17s-52w. T.D. 2,860 ft.; fsg.; parted 8¼-in.
Gulf Oil Corp. No. 1 Smith, C SW SE sec. 19-15s-53w. Drlg. in sh. and L. 6,289 ft.

Logan County

Transylvania Dev. Co. No. 1 Sheldon, NE sec. 3-10n-55w. Cellar; M.I. rot. (first report).

Mesa County

Midwest Drlg. & Dev. Co. No. 1 Callahan, NE NW SE sec. 30-8s-97w. T.D. 3,337 ft.; fsg.; increase in S.G. and brownish-green oil; installed new line and prep. to go to Dakotas.
Continental Oil Co. et al No. 1 Miller, SW SW NW sec. 36-8s-91w. Cmtd. 13⅜-in. at 630 ft. with 480 sacks and S.D. for winter.

Moffat County

Morapas Pet. Co. No. 1 Coles, SW SW SE sec. 1-3n-92w. T.D. 2,670 ft.; rng. 8¼-in.
Kerr-Lynn Drlg. Co. No. 1 Denise, C SE SE sec. 19-9n-99w. Drlg. 3,005 ft.; may S.D. for winter and rot. tools.

Montezuma County

McElmo Oil Co. No. 1 West, NE NW NW sec. 31-36n-17w. T.D. 3,830 ft.; rmg. at 3,790 ft. to set 4½-in. on bttm.; making about 3 B.P.D. 45-grav. oil; 830 ft. in Penn.

Morgan County

Swisher and others No. 1 Lunt, SE cor. section 3-4n-60w, Orchard district, was abandoned at 1,718 feet with tools and bailer in hole. No new depth has been made for the past year due to bad fishing job. It had a show of 50-gravity green oil and gas in unidentified sand at 1,620-95 feet, believed to be in the Foxhills or Upper Pierre. Bailed 40 to 50 gallons in best test in bad hole. Operators plan to drill another well in the spring.

Park County

South Park Oil Co. No. 1 State, SE SE SW sec. 16-11s-75w. S.D. 5,705 ft. for winter.
South Park Oil Co. No. 1 Lemar, NE NE SE sec. 34-11s-75w. Drlg. 5,335 ft.; increase in O.S.

Pitkin County

Glenco Dev. Co. No. 1 Govt., NW cor. sec. 9-10s-89w. T.D. 1,040 ft.; set 10-in. on bttm.

Pueblo County

Ed Solomon No. 1 Smith, E half sec. 11-21s-60w. Bldg. rig.

Rio Blanco County

Buford Oil Co. No. 1 Govt., C SW SW sec. 16-1n-91w. S.D. 2,135 ft.; M.I. 8¼-in.
Texas Co. and California Co. No. 1 Unit, SW SE NW sec. 35-3n-94w. T.D. 6,211 ft.; cmtd. 9⅝-in. at 6,208 ft.; W.O.C.

Routt County

L. E. Craig and E. L. Moore are rigging up a test on the Trull anticline northwest of Steamboat Springs and northeast of the Tow Creek field in its No. 1 Erwin, C SW NE section 33-7n-85w. Location is east of a well drilled by Morrison & Johnson several years ago in the SW SW SE section 31-7n-85w, which tested the Dakota at 2,800 feet. Roy Holloman, geologist, of Denver, made the location for the new test. The structure is formed in the beds of the Lower Mancos and extends for 7 miles through Townships 6n-85w and 7n-85w.

Craig & Moore No. 1 Erwin, C SW NE sec. 33-7n-85w. R.U.C.T. (first report).

Gas Line for Moffat

The Rocky Mountain Gas Co. (Ohio Oil Co.) is laying a 3-inch gas line from its Thornburg-Craig line in Moffat County to the Iles field to furnish fuel to the Texas Co. for field uses. The spur will be 4 miles long.

WYOMING

Albany County

The Murphy Oil Co. No. 10 Holst, SE SE NE section 13-17n-77w, Quealy dome, was completed in the Dakota at a total depth of 3,487 feet as an average well. It was not tested through the casing, but is on production through a bean and made 100 bbls. first 24 hours with a back pressure on the tubing of 122 to 125 pounds. It is a north offset to No. 7 Holst.

The Wyco Oil Co., Inc. No. 1 Chappel, C NE NW section 33-21n-76w, East Rock River, was completed at 765 feet, after plugging back from 1,680 feet, as a small gas well in the Wall Creek.

Murphy Oil Co. No. 11 Holst, NE SW NE sec. 13-17n-77w. M.I.M.
Wyco Oil Co., Inc. No. 2-X Chappel, NE NE NW sec. 33-21n-76w. M.I.R.
Ohio Oil Co. No. 2 Griffin, SW SE SW sec. 2-21n-77w. Drlg. 1,464 ft.; top Muddy 1,376 ft.
Murphy Oil Co. No. 2 Holst-Woolf, NE NW NW sec. 19-17n-76w. Drlg. 1,944 ft.

Big Horn County

Ohio Oil Co. No. 3 Sidon Canal, NW SW (Lot 40), sec. 24-56n-97w. Loc.; W.O. rig.
Joan Oil Co. No. 1 Howell, sec. 32-55n-97w (Lot 63). S.D. 1,150 ft.
Peay Oil Co. No. 1 Denio, Tr. 43-C, sec. 15-55n-97w. S.D. 3,930 ft.

Campbell County

Powder River O. & G. Co. No. 1 Rhodes, NE SE SW sec. 24-49n-74w. S.D. 650 ft.

Carbon County

The Sinclair-Wyoming Oil Co. No. 11-A Wertz, on the Wertz dome, a near completion in the Tensleep, was deepened to 5,987 feet from 5,984½ feet, cores showing 2½ additional feet of saturation, but not enough gas pressure to flow. Hole is full of oil and gas lift may be installed. It is an offset on the northwest to the same firm's No. 10-A Wertz, which was completed in the Tensleep at 5,863-83 feet last year for 1,850 bbls. initial.

The Ohio Oil Co.-California Co. No. 5 Cronberg-Union Pacific, on the Big Medicine Bow structure, is shut down at 5,765 feet and is moving tools away, but it has not been abandoned. After several addi-

tional shots at 5,581-5,606 feet it failed to show oil, gas or water. Sand was very hard and tight.

Ohio Oil Co. No. 13 Harrison & Cooper, SW SE SW sec. 35-20n-78w. Spdg.
Superior Oil Co. No. 1 Christensen, NW NW NW sec. 7-12n-92w. Drlg. below 373 feet after cmtd. 12½-in.
Ohio Oil Co. No. 2 Union Pacific, SW SW SE sec. 30-21n-80w. Drlg. 695 ft.; cmtd. 13⅜-in. 308 ft.; 300-ft. sat.
Ohio Oil Co. No. 1 Brimmer, SE SE SE sec. 32-27n-89w. Drlg. 1,225 ft. (cor. loc.).
Ohio Oil Co.-California Co. No. 4-B Kyle, C SW SW sec. 24-21n-79w. W.O. rig.
Ohio Oil Co.-California Co. No. 6 Union Pacific-Johnson, C SW SE sec. 23-21n-79w. M.I. tools.
Sinclair-Wyoming Oil Co. No. 11 Wertz, SE NW NW sec. 7-26n-89w. T.D. 5,987 ft.; H.F.O.; prep. to test.
Producers Oil Co. No. 1, CNL sec. 14-20s-88w. Drlg. 194 ft.
Ohio Oil Co.-California Co. No. 5 Cronberg-U. P., C NW NW sec. 25-21-79w. S.D.O. 5,765 ft.
Ohio Oil Co.-California Co. No. 3-A Kyle, C SW NE sec. 26-21n-79w. T.D. 5,748 ft.; P.B. to 5,606 ft.; nominal S.O. in Upper Sundance.
Medicine Bow Oil Co. No. 1 Hintze-Govt., C NE SE sec. 18-22n-78w. S.D. 2,347 ft.

Converse County

D. D. Gray No. 1 Lane, SW SE SE sec. 22-32n-69w. M.I.M.
Kaufman & Quinlan Bros. No. 1 Lane, SE NW NE sec. 27-32n-69w. Loc. (first report).
John T. Coffee, Jr. No. 1 Mary Gaspar, NW NW SW sec. 25-32n-69w. Drlg. 250 ft.
Ainsworth Oil Co. No. 1 Marberger, NE SE NE sec. 34-32n-69w. Drlg. 350 ft.
Hail-Thornton et al No. 1 Roth, C NW SE sec. 13-32n-69w. U.R. 8¼-in. to 448 ft. for W.S.O.
Wyoming Southern Oil Co. No. 1 Lane, C NW NE sec. 27-32n-69w. Spd. and S.D.
Elbe Oil Ld. & Dev. Co. No. 1 Benham, NW NE sec. 5-31-70w. M.I.M.
Tom Carney No. 1 Beaver, SE SE SW sec. 28-35n-68w. Some material on loc.
New Era Fuel Co. No. 1 Jones, SE SE SE sec. 21-32n-69w. Drlg. 475 ft.
Chadron-Osage Oil Co. No. 1 State, SW cor. sec. 16-32n-69w. T.D. 4,060 ft.; cmtd. 8¼-in. at 4,040 ft.; W.O.C.
Wyoming-Southern Oil Co. No. 3 Salisbury, NE NE SE sec. 27-32n-69w. T.D. 603 ft.; cmtd. 6⅝-in. at 568 ft.; 300 ft. O.I.H.

Fremont County

The Sinclair-Wyoming Oil Co. No. 2-C Muskrat, which tested the Madison lime on the Muskrat dome at a total depth of 8,112 feet and plugged back to 7,555 feet, gives indications of being completed as a big gas well. It was cemented back into the 7-inch casing and pipe was perforated at 5,440-43 feet. Well was then shut in and built up a pressure of 2,200 pounds in 40 minutes. It is waiting on valves to test. Gas probably is coming from the Lower Frontier.

Stanolind O. & G. Co. No. 1 Govt., C SE SE sec. 3-33n-96w. Drlg. 4,125 ft.; sd. and sh.
Sinclair-Wyoming Oil Co. No. 2-C Muskrat, NE SW SW sec. 1-33n-92w. T.D. 8,112 ft.; P.B. to 7-in. and perf. opposite gas sd.; W.O. valves to test.
Consolidated Oil Properties No. 3, C SW SE sec. 16-1n-1w. Spdg.
H. Kenyon Burch No. 1 Enos, CEL NE NE sec. 28-3n-1w. S.D.O. 970 ft.; no shows.
Ben Stewart No. 1 Darnell, NE SE sec. 26-3n-1w. T.D. 500 ft.; set 8¼-in. at 475 ft.

Hot Springs County

Italo Pet. Corp. No. 1 Phebus-Govt., NW NW SW sec. 11-44n-98w. Drlg. 2,250 ft.
Oscar B. Grace No. 4 Govt., CNL SE NW sec. 21-43n-92w. T.D. 380 ft.; fsg. bailer.

Lincoln County

H. M. Eller et al No. 4 Govt., SE NW SW sec. 32-19n-116w. T.D. 401 ft.; will test S.O. in lenticular sd. at 397-401 ft.
Place Oil Co. No. 1 Davis, SE SE SE sec. 9-26n-11w. T.D. 1,228 ft.; set pipe on top sat. zone at 1,212 ft.; tstg.

Natrona County

The Stanolind Oil & Gas Co. released locations for three additional wells in Salt Creek where it is developing production in the Tensleep horizon. The Tensleep wells are being located in the center of forties.

Its No. 11 Wyoming Associated Oil Co.-T.P. is a near completion and is trying out a new method in locating the water level. Its total depth is 4,043 feet. The 6⅝-inch was cemented through the Tensleep at 4,042 feet. The casing will be perforated in 10-foot intervals from the bottom upward to the top of saturation. Each section perforated will be tested with packers above and below the perforated section being tested.

Stanolind O. & G. Co. No. 26 Wyo. Asso.-T.P.-35, C SE NW sec. 35-40n-79w. Loc. (first report).
Stanolind O. & G. Co. No. 26 Wyo. Assoc.-T.P.-26, C SE SW sec. 26-40-79w. Loc. (first report).
Stanolind O. & G. Co. No. 8 Wyo. Assoc.-T.P.-35. Cellar and pits (first report).
Stanolind O. & G. Co. No. 11 Wyo. Asso.-Tensleep, C NE NW sec. 35-40n-79w. T.D. 4,043 ft.; cmtd. 6⅝-in. at 4,032 ft.; will perf. csg. and test.
Stanolind O. & G. Co. No. 29 Wyo. Asso.-Tensleep, C SW SW sec. 26-40n-79w. Drlg. 3,086 ft.
General Pet. Corp. No. 1 Govt., C NW SE sec. 21-35n-77w. Drlg. 3,400 ft.; top Steele sh. 2,960 ft.
Western Producers, Inc., No. 1 Govt., NW SW SE sec. 5-39n-78w. Res.; drlg. 745 ft.
Stanolind O. & G. Co. No. 11 Wyo. Asso.-T.P.-35. Bldg. rig.

Niobrara County

The Ohio Oil Co. had a good Sundance sand well in Lance Creek in its No. 9 Carrie Putnam, C NE NW section 4-35n-65w, on the east side, a south offset to its No. 8 Carrie Putnam. It was completed at 4,186 feet in the Sundance at 4,041-59 feet and flowed 850 bbls. first 24 hours through the 7-inch at 4,039 feet. It flowed at the rate of 35 bbls. per hour through the tubing. This company has made a location for its No. 8 Converse Sheep in the NW SE SW section 32-36n-65w, a close offset to its No. 5 Converse Sheep which was completed in 1936 as a mystery well, having made the first test of the Minnelusa in that field. Location is on top of the structure. No information was ever released about the Minnelusa discovery, but it was generally considered to have been a big well. It was plugged back and completed in the Sundance.

Conflicting rumors, both favorable and unfavorable, have been circulated regarding the Continental Oil Co. No. 1 Leach, an important wildcat to the Minnelusa, 4 miles out on the east from production. The company is releasing no information other than drilling depths.

Ohio Oil Co. No. 8 Converse Sheep, NE SE SW sec. 32-36n-65w. Loc. (first report).
Ohio Oil Co. No. 2 Cash OPC-5, NW NW NE sec. 4-35n-65w. R.U.R. (cor. loc.).
Continental Oil Co. No. 6-B Schuricht, SW SW SE sec. 6-35n-65w. Drlg. 400 ft.
J. M. Huber Corp. No. 1 H. & M., NE NE NE sec. 8-35n-65w. W.O. rig.
J. M. Huber Corp. No. 1 Joss, NE SE NW sec. 6-35n-65w. T.D. 4,096 ft.; O.W.D.D.; M.I.R.
Lewis Goekel No. 1, NE SE NW sec. 31-35n-62e. Resumed drlg. 1,550 ft.
Minnelusa Oil Co. No. 3 Joss, NE NE SW sec. 6-35n-65w. T.D. 3,152 ft.; cmtd. pipe 702 ft.; W.O.C. (formerly J. M. Huber Corp.).
Continental Oil Co. No. 3 Apex-1, SE SE NE sec. 34-36n-65w. T.D. 5,480 ft.; fsg. D.P.
W. A. Maupin et al No. 1 Berggren, NW sec. 23-35n-63w. Drlg. 180 ft.
Minnelusa Oil Co. No. 1-A Lamb, NE SE SW sec. 27-36n-65w. S.D. 5,412 ft. to str. titles; Minnelusa heavily sat.
Continental Oil Co. No. 5-B Schuricht, C SW SW sec. 5-35n-65w. Cg. sat. Minnelusa sd. at 5,265 ft.; top sat. 5,202 ft.
Ohio Oil Co. No. 2 Leo-O.P.C., NE NE SE sec. 35-36n-65w. R.U.R.
Ohio Oil Co. No. 1 Leo-O.P.C.-7, NW NW SE sec. 35-36n-65w. T.D. 5,641 ft.; to test on pump.
Continental Oil Co. No. 1 Leach, SW NE NE sec. 29-36n-64w. Drlg. 5,940 ft.
Continental Oil Co. No. 8 Otto Rohlff, SW SW SE sec. 31-36n-65w. Drlg. 5,265 ft. (C.D.) in Anhyd.
MacKinnie Oil & Dev. Co. No. 2 Thompson, NW NW NE sec. 7-35n-65w. T.D. 4,064 ft.; C.O. at 3,750 ft.

Park County

Resolute Oil Co. No. 1 Northern Pacific, C NE NW sec. 21-57n-101w. Drlg. 7,310 ft.
Resolute Oil Co. No. 1 Govt., C NE NE sec. 20-57n-101w. Drlg. 8,622 ft.; 12 ft. in second Wall Creek; cores sat.

Platte County

Dividend O. & R. Co., Inc., No. 1, CSL NW SW sec. 17-24n-66. Drlg. 2,415 ft.; C.D.

Sublette County

Texas Co. No. 4-I, SW NE SW sec. 27-27n-113w. Drlg 555 ft.

Sweetwater County

Mountain Fuel Supply Co. No. 1 Hay, NE SE NW sec. 2-19n-110w. Drlg. 865 ft.; cmtd. 13⅜-in. at 301 ft.; 150 ft. sat.; 61 ft. of 13⅜-in. and 12½-in. welded.
Italo Pet. Corp. No. 1 Govt., SW SW SW sec. 36-13n-95w. S.D. 610 ft.
Sinclair-Wyoming Oil Co. No. 77, SE NE NE sec. 10-26n-90w. Drlg. r.b. 2,730 ft.
Mountain Fuel Supply Co. No. 1 Union Pacific, C SW SE sec. 13-17n-104w. Cmtd. 4¾-in. at 3,330 ft.
Mountain Fuel Supply Co. No. 1 Williams, C NE NE sec. 5-12n-95w. Drlg. 5,680 ft.
Mountain Fuel Supply Co. No. 1 Union Pacific, C SE NE sec. 29-15n-104w, S. of Baxter Basin. Loc.

Uinta County

E. A. Ottman et al No. 1 Govt., C SE NW sec. 26-14n-110w. Drlg. 1,210 ft.

Weston County

Refiners are continuing to take storage oil from the Osage field and as a result a considerable drilling campaign is getting under way. Total Osage production in October was 23,694 bbls. and refiners took 27,335 bbls. from the field, the excess coming from storage.

One completion was reported in Gerald Bock No. 1, NE cor. section 36-47n-63w, which made 4 bbls. per day at 225 feet, from shale above the Dakota.

Osage Trust Co. No. 27, C NW SE sec. 14-46n-64w. R.U.C.T.
Osage Trust Co. No. 28, C NE SW sec. 14-46n-64w. Loc.
Chas. F. Martens No. 8, SW SW NW sec. 24-36n-64w. Loc. (first report).
Osage Trust Co. No. 1, SE NW NE sec. 22-46n-64w. R.U.C.T.
Bradley-Manewal Oil Co. No. 7, CWL NE NE sec. 20-46n-63w. R.O.G.; (first report).
Federal Oil Co. No. 9, CNL SE SE sec. 15-46n-64w. R.O.G.; (first report).
Chas. Goodell et al No. 1 State, C NE NE sec. 23-44n-63w. Rdy. to spd.
John Brorphy No. 1 George, SW SE NW sec. 26-48n-64w. S.D. 1,850 ft.; repairs.
Sisty et al No. 1 Carmine, SE SW sec. 31-44n-62w. Drlg. 755 ft.
Le Faivre Oil Synd. No. 1 Martin, NW NW SW sec. 29-45n-68w. Drlg. 2,550 ft.; will U.R. 10-in. at 2,130 ft. for Wtr. S.O.
Giles & Proutt No. 1 Govt., CEL SW NE sec. 29-45n-61w. Spdg. 30 ft.

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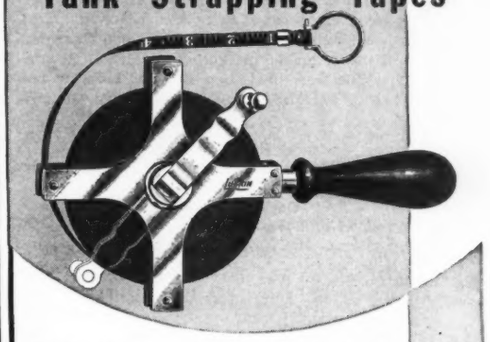

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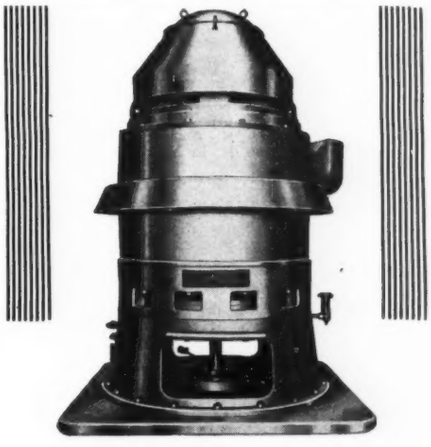

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MONTANA

Production of Montana fields in September, as reported by the State Conservation Board, was 465,817 bbls., a decrease of 72,310 bbls. as compared with August. Storage at the end of September was 1,196,058 bbls., a decrease of 35,492 bbls. Gasoline sales in September were 13,358,335 gallons, which compares with 15,474,335 gallons in August.

A meeting of operators in northern Montana fields was held at Shelby the past week at which there was a general discussion of marketing problems. A number of speeches were made opposing and favoring proration, but no agreement was reached on any definite plan.

Big Horn County

E. L. Dana No. 1 Hardy, SW NW sec. 22-9s-35e. Drlg. 700 ft. in Eagle (Shannon) sd.; S.O. and G.

Carbon County

R. C. Tarrant No. 2 Heare, NW SE NW sec. 14-6s-10e. Drlg. 340 ft.
Miracle Oil Co. No. 2, CWL NE SE sec. 3-6s-23e. Drlg. 1,580 ft. in Kootenai.
Ohio Oil Co. No. 16 Kirt, C SE SE sec. 4-7s-21e. T.D. 5,976 ft.; dry in Lakota; P.B. to 8⅝-in. at 4,950 ft.; perf. pipe to test.
Geo. Muth et al No. 1, CSL SE SE sec. 23-6s-23e. S.D. indef. at 1,500 ft.
Henderson Prod. Co. No. 1-H-11 Elk 11, SE SE NW sec. 35-9s-23e. S.D. 1,626 ft. for 8¼-in.; top Frontier 1,608 ft.; small S.O.
Shaw-Wa Pet. Co. No. 1 Govt., SW SW NE sec. 35-9s-23e. Drlg. 700 ft.

Choteau County

Security Pet. Co. No. 1 Johnson, NE sec. 23-26n-3e. Drlg. Colo. sh. at 1,700 ft.

Cascade County

C. Leonard Smith No. 1-A Smith-Schwingle, NE NE SW sec. 14-22n-2e. T.D. 750 ft.; fsg. tools.

Daniels County

White Tail O. & G. Co. No. 2 Wiley, NW NW NW sec. 10-36n-50e. Drlg. 1,671 ft.; prep. to run 10-in.

Fallon County

Johnson-Burke No. 1 Government, SE NE SE section 6-8n-59e, Cedar Creek structure, was abandoned at 1,200 feet, the Judith River at 1,062-1,164 feet being dry.

Fergus County

Emmons and others No. 4 Mauland, SW cor. section 3-21n-18e, Winifred district, was completed at 572 feet for 200,000 feet of gas in the Eagle sandstone at 560-72 feet.

Baugham & Singley No. 1 Skaggs, C NW SW sec. 7-15n-20e. Drlg. 300 ft. in Quadrant; 10-in. at 20 ft.; 8¼-in. at 200 ft. (first report).
Lewistown Oil Co. No. 1 Parks, C NE NE sec. 13-15n-18e. Drlg. 1,200 ft.; 10-in. at 360 ft.; 8¼-in. at 690 ft.
East Crest Oil Co. No. 1 Brakke, NW SE SW sec. 14-15n-19e. Drlg. 496 ft. in Quadrant; 10-in. at 356 ft. (formerly Sam Phillips).
White Top O. & G. Co. No. 1 Govt., C NE SW sec. 35-14n-19e. Drlg. 1,100 ft. in Madison lime.

Glacier County

Three wells were completed in the Cut Bank area. There were no new locations and active drilling wells are now down to two.

The Drumheller Oil Trust No. 1 fee, C NE SW section 17-34n-6w, a wildcat seeking a west extension of the Cut Bank pool, was dry and abandoned at 3,180 feet. It had no Sunburst sand, but Cut Bank section correlated fairly well with producers in the field. The Cut Bank was at 3,105-72 feet with a show of water at 3,157-63 feet. Elevation 3,770 feet. Sand lacked sufficient porosity to carry oil. It was found 160 feet higher than the lowest producer in the field.

A. B. Cobb No. 1 State, C NE NE sec. 30-37n-4w. C.O. at 2,270 ft.
B. V. Hole No. 3 All.-124, SE SW SE sec. 1-32n-6w. Drlg. 2,800 ft.

Hill County

W. E. Drought No. 1, SE NW SE sec. 29-32n-16e. Drlg. 560 ft. in Eagle sd. (first report).

Judith Basin County

Fletcher E. Hunt No. 3, NW SE NE sec. 30-14n-15e. T.D. 1,750 ft.; prep. to set 5⅞-in. on top Madison at 1,746 ft.

Lewis and Clark County

Lewis & Clark Oil Synd. No. 1 Lewis & Clark, NW NW SW sec. 11-18n-5w. M.I.M.
Lewis & Clark Oil Synd. No. 1 Pathfinder, CNL NW SE sec. 29-18n-4w. Loc.
Lewis & Clark Oil Synd. No. 1 Sacajawea, SE NE NE sec. 5-17n-4w. Loc.; prob. not drill this year.

Park County

Ben W. Ryan et al No. 1 Burgess, SE SW NW sec. 28-2s-11e. Drlg. 1,250 ft.; S.G. at 1,100 ft.

Petroleum County

O. B. Canfield No. 2 Govt., SE SE NE sec. 21-17n-24e. Drlg. 750 ft.; set 5⅞-in. for W.S.O.

Phillips County

R. G. Parrent No. 1 Hanson, NW NW SE section 12-24n-25e, Lortman district, was dry and abandoned at 715 feet in the Eagle sandstone.

Roosevelt County

John W. Schmidt et al No. 1 Freu, NW NW NE sec. 21-28n-50w. T.D. 1,400 ft.; S.G. through H.F.W.; rng. csg. for W.S.O.

Toole County

There were four completions and three new operations in Kevin-Sunburst.

The California Co. No. 7 Neuman, NW NW NE section 23-35n-2w, was rated at 2 bbls. per day in the contact at 1,407 feet. Total depth is 1,525 feet.

The New Era Fuel Co. No. 2 Goeddertz, CWL SE SW section 12-35n-3w, swabbed 75 bbls. per day naturally, before acidizing at 1,538 feet. The Sunburst sand was at 1,519-38 feet.

The Rice Oil Co. No. 2 Larson, SW NW NW section 18-35n-2w, was plugged and abandoned at 1,638 feet. Contact at 1,600 feet had only small show of oil.

William McKnight No. 3 Gunderson, NE NE NW section 19-35n-2w, made 60 bbls. per day after acidizing with 500 gallons. Contact was at 1,570-1,604 feet.

Wm. McKnight No. 4 Gunderson, NE NE NW sec. 19-35n-2w. Drlg. 400 ft. (first report).
Big West Oil Co. No. 7 McDonald, NW NE NE sec. 19-35n-2w. Drlg. 900 ft. (first report).
Scotland No. 2 McNamar, CNL NW SW sec. 29-35n-3w. T.D. 1,000 ft.; rng. 8-in. (first report).
Ohio Oil Co. No. 2 Sunburst, C NE NE sec. 12-32n-2w. Drlg. 1,275 ft.
Hannah-Porter Co. No. 2 Benjamin, CWL SE SW sec. 18-33n-1w. Drlg. 820 ft.
56 Pet. Co. No. 1 Davidson, SE SE NW sec. 26-35n-4w. Drlg. 1,825 ft.
Welch Bros. No. 2 Ward, SW SE NE sec. 29-35n-3w. Drlg. 1,335 ft.
Big West Oil Co. No. 6 McDonald, SW SE SW sec. 19-35n-2w. T.D. 1,516 ft.; contact 1,508 ft.; will acid.
Plotke & Rader No. 11 Fryberger, NW SE SE sec. 29-35n-3w. T.D. 1,500 ft.; C.O.
Hamilton & Hamilton No. 4 Reeg, SE SW SE sec. 14-35n-2w. S.D. 450 ft.
Vander Pas & Montgomery No. 1 Thumm, NW SW NW sec. 33-35n-3w. T.D. 1,710 ft.; contact 1,695 ft.; stdg.
Guy Smith No. 1 Govt., C NE SE sec. 35-36n-3w. Spd. 10 ft. and S.D.
C. T. Olen No. 7 Engemoen, C NW NW sec. 14-35n-2w. T.D. 1,607 ft.; contact 1,591 ft.
C. L. Tomlinson No. 1 Davidson, NW NE SE sec. 28-35n-3w. Drlg. 1,530 ft.
E. O. Reickhoff No. 3 Baum, SW SW SE sec. 3-35n-3w. S.D. 10 ft.
Bryant Bros. No. 1 Lashbaugh, NE SW NW sec. 34-25n-2w. T.D. 850 ft.; R.U. heavier mach. to resume.

Outside Kevin-Sunburst

Montana Gas Corp. No. 2 Clark, C SE SW sec. 24-37n-1w. T.D. 2,103 ft.; cmtd. 8¼-in. top gas sd. at 2,103 ft.; W.O.C.

Yellowstone County

Riverton Oil Co. No. 1 Fox, CEL NW NE sec. 14-2n-23e. Drlg. 1,540 ft.; S.O. and G. at 1,400 ft.
Broadview Dome Oil Co. No. 1, NE NE SW sec. 18-3n-23e. Drlg. 3,325 ft. in Ellis.
Lauriel Oil Co. No. 1, C NW SW sec. 7-2s-24e. Drlg. Colo. sh. 180 ft.

UTAH

Daggett County

Mountain Fuel Supply Co. No. 1 Smith, C SW NE sec. 20-3n-24e. Tstg. Dakota at 5,608-67 ft.; T.D. 5,674 ft.; 12,000,000 ft. through D.P. before cmtg. 6⅝-in. at 5,603 ft.
Mountain Fuel Supply Co. No. 3-B Murphy, NW NW SW sec. 23-3n-24e. Bldg. rig.

Grand County

Utah Southern Oil Co. No. 1 Hyde, SE NW NW sec. 33-22s-22e. S.D. 6,715 ft.; M.I. heavier rotary equip.
Columbia Crude Corp. No. 1 Rath, NW SW SE sec. 12-25s-20e. T.D. 2,265 ft.; prep. to resume to go to 3,000 ft.
Cane Creek Oil Co. No. 1 Govt., NW SW sec. 31-26n-21e. S.D. 400 ft.

NEBRASKA

Sioux County

J. M. Huber Corp. and United Producers, Inc., No. 1 Morgan, C SW SW sec. 32-35n-56e. S.D. 3,257 ft.; r.b.

Jefferson County

L. R. Page et al No. 1 Bonham, C SE SE sec. 1-1n-1e. Drlg. 2,300 ft.

NORTH DAKOTA

Williams County

California Co. No. 1 Kamp, C NW NE sec. 3-154n-96w. T.D. 1,000 ft.; cmtd. 13⅜-in. at 850 ft.

Petroleum Exports

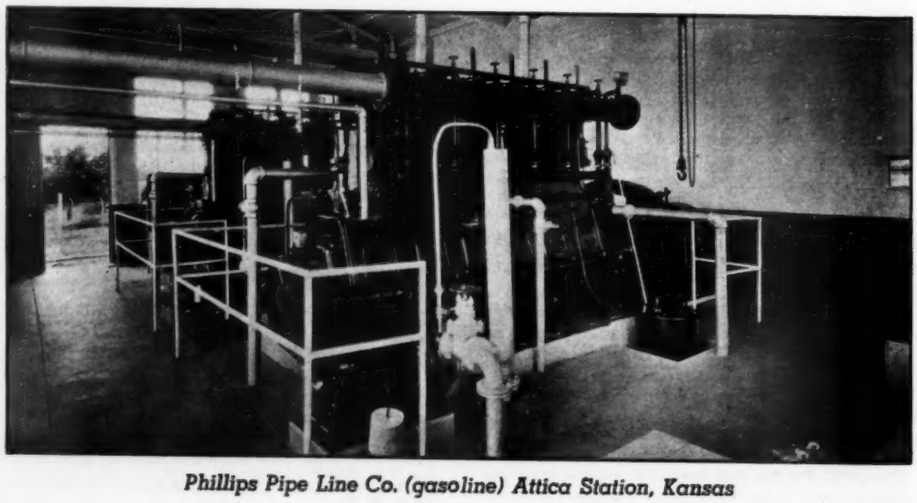
The following statistics of exports of petroleum and its products for the month of September, 1937, are furnished by the U. S. department of commerce:

	(Barrels)
Petroleum crude	6,601,644
Natural gasoline	603,939
Gasoline in bulk	3,435,427
Gasoline in containers	204,050
Naphtha, solvents and other finished light products	28,108
Kerosene in bulk	682,431
Kerosene in containers	76,956
Gas oil and distillate fuel oil	2,902,183
Residual fuel oil	907,562
Bunker oil—used in foreign trade:	
American	1,507,602
Foreign	1,986,747
Lubricating oil, red and pale	521,703
Lubricating oil, black	86,900
Lubricating oil, cylinder bright stock	90,314
Cylinder oil, steam refined stock	76,766
Lubricating oils not elsewhere specified	49,677
	(Gallons)
Benzol	2,730,762
Mineral spirits	322,795
Insulating and transformer oil	127,978
Light lubricating oil in small packages	86,343
	(Pounds)
Lubricating greases	8,183,162
Liquid petroleum gases	3,249,357
Paraffin wax, unrefined	8,639,208
Paraffin wax, refined	6,256,568
Asphalt, natural, manufactured	5,510,905
	(Tons)
Petroleum, asphalt, unmanufactured	1,645
Petroleum, asphalt, manufactured	18,100
Asphalt, natural, unmanufactured	1,204
Petroleum coke	10,061

Petroleum Imports

The following statistics of imports of petroleum and its products for the month of September are furnished by the U. S. Department of Commerce:

Crude petroleum:	Barrels
Immediate consumption	2,199,325
Entered bond for manufacture and export	360,735
Fuel oil:	
Immediate consumption	333,500
Withdrawn from bond for consumption	22,753
Withdrawn as supplies to vessels	1,612,928
Entered into bond	2,315,691
Gas oil, including diesel oil:	
For immediate consumption	14,457
Withdrawn from bond for consumption	187
Unfinished distillates and liquid derivatives of petroleum, n.e.s.:	
Immediate consumption	13,235
Entered bond for manufactured and export	244,993
Gasoline—Immediate consumption	1,000
Kerosene—Immediate consumption	12
Lubricating oil including paraffin oil:	
Immediate consumption	70
Withdrawn from bond for consumption	8
Withdrawn for supplies to vessels	461
Entered into bond	545
Asphalt including cutbacks—Immediate consumption	64,001
Paraffin wax:	Pounds
Immediate consumption	3,522,913
Entered into bond	157,000
Petroleum jelly:	
Immediate consumption	816
Petroleum asphaltum and bitumen:	Tons
Immediate consumption	93
Withdrawn for export	1,206



Phillips Pipe Line Co. (gasoline) Attica Station, Kansas

Michigan Field Report

CONSERVATION DEPARTMENT WOULD CURTAIL OPERATIONS

By O. C. PRESSPRICH

SAGINAW, Mich., Nov. 15.—Attempts by the Michigan conservation department to slow down the state's oil development cropped out this week when department investigators reported they had heard rumors of a coming break in the petroleum market, with a consequent further reduction in the price of Michigan crude.

The conservation commission took the attitude that if the price situation is as uncertain as its investigators report, it would be better for the state itself and for the Michigan oil industry to "go a bit slow on development of new fields."

Commissioner Harry H. Whiteley seemed to express the view of the commission as a whole when he asserted: "The threatened break in petroleum prices clearly warns us that sound conservation for Michigan is to keep its oil in the ground."

In line with this attitude the commission rejected its lands division recommendations for offering 10,575 acres of state-owned lands at a leasing auction late this month. The lands it had been proposed to offer for leasing were in Arenac, Gladwin, Mecosta and Roscommon counties, with approximately 5,000 acres of the total in Sheridan Township, Roscommon County, scene just now of extensive explorations on privately owned lands.

This action by the conservation department more or less overshadowed developments in the various fields where operations were being speeded before winter arrives to increase costs and retard progress. This speed-up saw perhaps two score wells in all Michigan fields either in the pay or approaching it closely.

Eight completions were recorded during the week in Buckeye Township of Gladwin County, and several more were scheduled to be brought in within the next few days. Other Michigan fields reflected the scurry and bustle evident in Buckeye, for the producing areas of Isabella, Midland and Allegan counties reporting completions scheduled to add to their production within a week.

Despite the threat of winter adding to drilling hazards and costs, blocked roads leading to wells in interior locations, and a general slowup of work, wildcatting continued in many fields, pointing to the possibility of further tapping Michigan's oil resources in previously unexplored territory. Through these wildcats, which continue to swell the permit list weekly, operators hope for a strike which will open up another such prolific pool as the Crystal or the Buckeye. Considering the scattered nature of this prospecting, operators point to the comparatively few dry holes which failed to retard development and acted rather to stimulate cautious yet steady progress in determination of the exact scope of various fields.

Gladwin County—North Buckeye

Topping the list of new producers in Buckeye, the leading Michigan oil field, the past week was Sun Oil Co. No. 4 Blazey Luks, SW NW NE section 10-18n-1w, which produced 1,000 bbls. a day after an acid treatment. Beaver Trust No. 4 Thompson, SW NW NW section 13-18n-1w, developed the largest natural producer of the week when its eastern extension of the north pool showing a gauge of 800 bbls. steady production since November 10. C. W. Teater No. 5 Adamets, NE SW SW section 12-18n-1w, another eastern extension on the same level as the discovery well, made a 500-bbl. natural production and continued to prove up territory now dotted with wells which for several months have remained dormant. Sun Oil Co. No. 9 Mary Raab, on a prolific lease in the SW NW NE section 10-18n-1w, the discovery section, failed to prove up to expectations when it flowed only 200 bbls. daily after acid treatment. Cryden-Rowmor Corp. No. 8 Schaeffer, SE SE SW section 12-18n-1w, another prolific east field producer, came in at 500 bbls. daily, stepping up production in that area to a point where it soon will rival if not surpass production in section 10. Two other potential producers were ready to be brought in momentarily. They are Sun Oil Co. No. 7 Ockerman, NE NE SW section 10-18n-1w, which was drilling ahead of 3,600 feet, was scheduled to hit pay soon, and C. W. Teater No. 4 Domokos, NW NW NW section 10-18n11w, which was at 3,550 feet after suspending operations for several days.

South Buckeye

Most significant development in the south Buckeye pool was the west extension and connection of the so-called midway sector by Bell & Marks No. 1 Schember, NE NW NW section 26-18n-1w, which hit the pay for a 150-bbl. natural producer. Its success opens up considerable territory lying to the west and south of the discovery well in the area. Gordon Oil Co. No. 3-C State, NE NE SE section 36-18n-1w, came in with a 50-bbl. natural production, and the same company's No. 4 Trego, NW SE NE section 35-18n-1w, had a 110-bbl. natural production. Pence & King No. 1 Stahl, SW SE SW section 24-18n-1w, an eastern extension of the midway sector, proved its worth with 150 bbls. daily production after acid. This well has been closely watched by operators.

A rarity in the midway pool was F. O. Whitelow No. 4 Fritzwater, SW SE SE section 26-18n-1w, which was ordered plugged as dry, after finding the Dundee unfruitful. T. P. Caldwell No. 1 Hostetler, SE SE NE section 27-18n-1w, was still shut down at 3,164 feet, fishing for tools lost two weeks ago.

Gladwin County—Billings Township

Billings Township loomed as a possible field of activity before winter sets in with the strike of McClanahan Oil Co. No. 1 Havens, SW SE SW section 24-17n-1e, which flowed 150 bbls. daily after acid. The strike is southeast of the lower Buckeye field, and bears out the contention of operators of a southeasterly-northwesterly trend extending through Gladwin County.

Isabella County—Broomfield Township

Pure Oil Co. developed another Broomfield producer with its No. 2 Skarritt, NE NE NE section 5-14n-6w, which came in with a 240-bbl. daily natural flow.

Isabella County—Sherman Township

Pure Oil Co. No. 5-B McClintic, NW SE SW section 33-15n-6w, which had a 400-bbl. natural production, was acidized and came through for 1,000 bbls. daily from a depth of 3,630 feet.

Midland County—Jasper Township

Pure Oil Co. added two producers to its string in the Jasper field. Its No. 11-C Bond, N half SE NE section 12-13n-3w, was acidized with a 500-gallon shot with 6 bbls. of oil swabbed as the result, then was re-acidized with 5,000 gallons, resulting in 260 bbls. daily production. The second producer was the No. 6-D Raynor, S half NW SE section 12-13n-3w, which came in at 70 bbls. daily after acid.

Muskegon County—Moorland Township

West Michigan Consumers Co. No. 1 Burmeister, C NW quarter section 33-10n-14w, was completing as an edge field gas test which showed promise.

Midland County—Edenville Township

Possibility of an oil discovery loomed here at the week-end, 3 miles west of Edenville, when Sun Oil Co. No. 1-B State, N half SE NE section 5-16n-1w, shut down at 3,848 feet with 400 feet of oil reported in the hole in eight hours. The wildcat test is the only rig in this vicinity, and possibility of a favorable strike will add another potential field several miles from other Midland County producing areas.

Saginaw County—Lakefield Township

Saginaw County recorded another failure in an attempt to get back into Michigan's oil picture when Doran & Hilliard No. 1 Dobchinsky, NW NW SE section 33-11n-1e, was plugged and abandoned. Attention turned to Bond Oil Co. No. 1 Schoonmaker, SE NE NE section 1-11n-1e, which was completing this week with indications similar to those in the Dobchinsky well.

Arenac County—Clayton Township

Four completions are scheduled to be brought in in the Clayton field within a few days. They include: Weber Oil Co. No. 2 Berry, SE NE SW section 4-20n-4e; Michigan Devonian Petroleum Co. No. 3 Peavy, SW NW SE section 4; McClanahan Oil Co. No. 3 Buffalo Land Co., NE NE NW section 10-20n-4e, and Weber Oil Co. No. 5 Whiting, NW NE NE section 10. All are in various stages of the pay.

Gratiot County—Emerson Township

Redman Oil Co. No. 1 Creaser, NE SW SE section 18-11n-2w, was reported shut down at 3,115 feet.

Gladwin County—Sherman Township

Dapar Oil Co. and C. E. Weller No. 1 Villeneuve, SW SW NE section 11-20n-2w, was ready to attempt acid at 3,710 feet. A very tight formation was reported. The well is attracting interest of operators as indicating another possible Gladwin field, if successful.

Allegan Leads in Permits

Allegan County stepped to the front rank as a taker of oil drilling permits the past week, eclipsing the busy Buckeye field of Gladwin County for the first time. Eight of the week's 18 permits were for drilling in Allegan, six of them in Salem Township, center of the county's oil exploration activity.

Gladwin County took four of the remaining permits, while the rest were divided between Arenac, Clare, Mecosta and Shiawassee counties. The Clare and Mecosta permits are for gas exploration ventures. The one Shiawassee County permit is for a wildcat test, pure and simple, for to date there has been no oil discovery anywhere within that county's borders.

October Production

Michigan oil production pushed close to an all-time record in October, its total of 1,738,139 bbls. falling less than 4,000 bbls. short of the mark set in October, 1935, when the then flush Crystal field yielded 750,000 bbls. Crystal now is down to about 33,000 bbls. a month, while the Buckeye field, developed since last January, has taken front rank among the state's fields, with an October output—even under strict proration—of 833,094 bbls.

MICHIGAN CRUDE OIL RUNS

Daily Average for October, 1937

Pool—	Wells	Runs
Porter-Yost	427	9,173
Greendale-Chippewa	272	1,877
Geneva-Midland	3	26
Vernon-Leaton-Denver	97	1,657
Sherman-Isabella	46	6,452
Crystal-Winfield	80	1,071
Home-Vickerville	9	111
Beaverton	25	271
Buckeye-Wicklund-Oard	278	26,874
Ogemaw	210	2,184
Adams-Clayton-Arenac	35	3,744
Saginaw	55	38
Birch Run	25	69
Dundee-Monroe	3	21
Allegan County	42	2,308
Muskegon	93	193
Michigan Totals	1,702	56,069

Canadian Fields

Completions and Operations in Northwest and in Ontario

By VICTOR LAURISTON

CHATHAM, Ontario, Nov. 13.—In the southwest extension of Turner Valley, Firestone Petroleums No. 1, LSD 13, section 16-18-2w5, got the lime at 6,345 feet and finished drilling at 6,713 feet. It was cleared with gas-lift and started flowing between 400 and 500 bbls. a day. After adjusting tubing it will likely be acidized.

A quarter mile farther west, Prairie Royalties No. 1, LSD 16, section 17-18-2w5, finished 485 feet in the Madison at 7,315 feet, with natural production around 650 bbls., was treated with acid. A test of flush production showed 2,876 bbls. in 24 hours, but later the official test for prorating showed 2,058 bbls. settled production. Prorating was fixed at 926 bbls. It is now the second largest crude producer in the field.

The Prairie and Firestone wells, sponsored by the Anglo-Canadian Development & Holding Co. of Calgary, extend the proven area to the south and west. Prairie No. 1 is the most southwesterly producer yet brought in. Acidization increased its gas flow from 1,000,000 to 6,900,000 feet a day.

Commoil No. 1, LSD 15, section 29-18-2w5, finished in the Madison at 7,475 feet, showed a potential around 1,800 bbls. and has been prorated to 810 bbls. Granville Oils No. 1, LSD 16, same section, tested 500 bbls. and has been prorated to 225 bbls. Share Royalties No. 1, N half LSD 8, same section, tested 480 bbls. potential and was prorated to 216 bbls.

In section 32-18-2w5, Royal Crest Petroleums No. 1, LSD 9, showed potential of 600 bbls. and was prorated at 270 bbls.

In section 28-18-2w5, Model-Spooner-Reward No. 1, LSD 4, recorded potential of 1,200 bbls. and was prorated to 540 bbls. Four Star Petroleum No. 1, LSD 13, with natural production of 400 bbls., was acidized, bringing its potential to 600 bbls. It is prorated at 270 bbls. Richland Royalties No. 3, LSD 14, made 500 bbls. on official test, prorated to 225 bbls.

In section 21-18-2w5, Davies-Royalite No. 2, LSD 13, had a potential of 3,000 bbls. after acidization, and is prorated to 1,350 bbls.

In the southwest extension, Brown Oil Corp. No. 1, LSD 14, section 16-18-2w5, and Brown No. 2, LSD 8, section 20-18-2w5, showed a combined production of 640 bbls. on official test, and have been prorated to 288 bbls. Monarch Royalties No. 1, LSD 9, section 20-18-2w5, with potential of 600 bbls., was prorated to 270 bbls.

Tests in the Lime

In section 28-18-2w5, Three Point Petroleums No. 1, LSD 12, finished at 6,960 feet after getting the Madison at 6,562 feet, was acidized and is testing production, and looks like a good well.

In section 33-18-2w5, Royalite Oil Co. No. 6 Sterling Pacific, LSD 5, is below 6,913 feet after getting the limestone at 6,683 feet, and will probably be the next completion.

In section 32-18-2w5, West Flank Oil Co. No. 1, LSD 1, is deepening in the limestone after cementing casing at 6,720 feet.

In section 29-18-2w5, National Petroleum Corp. No. 1, S half LSD 8, is below 6,946 feet after getting the Madison at 6,786 feet, and has storage tanks ready to handle production.

West Side Drilling

In West Central Turner Valley, Brown Oil Corp. No. 3, LSD 15, section 19-18-2w5, is below 5,789 feet. Vulcan-Brown Petroleums No. 1, LSD 10, section 5-19-2w5, is below 2,002 feet.

In section 32-18-2w5, Royalite Oil Co. No. 28 Connaught, LSD 16, is below 2,286 feet. West Flank Oil Co. No. 2, N half LSD 1, is below 4,934 feet. West Flank No. 3, LSD 8, is below 5,190 feet.

In section 28-18-2w5, Richland Royalties No. 1, LSD 12, is below 3,275 feet. Richland No. 2, LSD 5, is below 5,940 feet.

In section 29-18-2w5, Davies Petroleums No. 1, LSD 2, bottoming at 3,508 feet with 10-inch casing cemented, has derrick up for rotary equipment which is being moved from Davies-Royalite No. 2. Sunburst Oil Co. No. 1, N half LSD 1, same section, has resumed from 2,610 feet and is below 2,644 feet. It offsets Model-Spooner-Reward No. 1 producer immediately to the west, and is being completed by British Trans-Canada Oils, Ltd. Globe Royalties No. 1, LSD 7, due south of Commoil No. 1 producer, shut down for several months, is preparing to resume from 2,475 feet.

In section 21-18-2w5, Barsac Royalties No. 1, LSD 12, is below 455 feet. Brown Oil Corp. No. 4, LSD 4, is below 1,380 feet.

In section 20-18-2w5, Spy Hill Royalties No. 1, LSD 16, has resumed from 4,020 feet after changing to rotary outfit. Royal Canadian Oils No. 1, LSD 15, is below 6,736 feet and looks like a very deep test. It is in line with Commoil No. 1, but probably somewhat farther west of the structure, which trends to the southeast. In the same section, Sunset Oils No. 1, LSD 10, is in hard formation below 6,638 feet and expected to go quite deep.

In section 19-18-2w5, Scottish Petroleums No. 1, LSD 16, has resumed after shutting off an exceptionally strong flow of surface water with 20-inch casing at 195 feet.

In section 9-18-2w5, National Petroleum Co. No. 2, LSD 14, is standing with 10¾-inch casing cemented at 3,005 feet, waiting for rotary outfit from No. 1. Mid-Royal Oils No. 2, LSD 3, same section, is rigged.

In section 33-17-2w5, Davies Petroleums No. 3, LSD 7, is rigging cable tool outfit from No. 1, and will spud this month.

Okalta Structure

On the Okalta fold, west of South Turner Valley, Okalta Oil Co. No. 6, LSD 3, section 30-18-2w5, is below 2,505 feet after straightening hole.

North Turner Valley

In North Turner Valley, Phillips Royalties No. 1, LSD 16, section 16-20-3w5, is running casing preparatory to deepening from 4,120 feet. Royalite Oil Co. No. 27 Turner Basin, LSD 7, section 27-20-3w5, is below 5,481 feet. Home Oil Co. No. 1 Millarville, LSD 8, section 33-20-3w5, is below 7,200 feet and preparing to run 8-inch casing.

Complete West Turner

In section 32-18-2w5, on the west flank of South Turner Valley, West Turner Petroleums No. 1, LSD 2, standing for several months at 2,659 feet, will be completed by Royalite Oil Co. West Turner Petroleums, Ltd., organized by Vancouver interests, holds a 120-acre lease immediately west of the 80 acres held by West Flank Oil Co., and about a half mile west of the Sterling-Pacific crude wells. No. 1 location offsets Commoil No. 1 producer immediately to the north. West Turner No. 2 was spotted some time ago in LSD 7, toward the north end of the lease, and tentative arrangements have been made for two additional wells, with an ultimate program of six tests contemplated.

New Tests Planned

In section 29-18-2w5, Model-Spooner-Reward No. 2 will be drilled in S half LSD 1, west of No. 1 producer, on acreage previously held by National Petroleum Corp. Location is northwest of Davies-Royalite No. 2, the largest producer in the field. The test will be drilled jointly by Model Oils, Spooner Oils and Reward Oils, on much the same basis as their No. 1 producer.

Anglo-Canadian Development & Holding Co. of Calgary has located a new test in LSD 15, section 17-18-2w5, some 1,300 feet due west of Prairie Royalties No. 1 producer. Location is on acreage secured by the Anglo-Canadian interests from Calgary & Edmonton Corp., Ltd., and marks a farther extension to the southwest of the active drilling area.

Turner Valley Marketing

Wells in the Turner Valley are now being prorated at 45 per cent of potential production, except those of 100 bbls. or less. A recent compilation shows potential of 20,383 bbls. for the entire field, to which Firestone Petroleums No. 1 and Three Point Petroleums No. 1 will each add approximately 500 bbls. without acidization, bringing the aggregate potential to 21,383 bbls. Daily production under proration will be about 9,817 bbls., or close to 3,500 bbls. a year allowable on the 45 per cent basis.

Marketing will be somewhat facilitated by the granting by the Canadian Pacific Railway of a reduction in freight rates on five-car shipments to Winnipeg to 39 cents per hundredweight. Manitoba has been largely served with refined products from outside plants, with only one refinery, the North Star at Winnipeg, operating extensively. This plant offers a potential market for 2,000 bbls. a day of crude, with possibilities of further expansion.

Imperial Oil, Ltd., has agreed to take all the Alberta crude the Royalite pipe lines can handle. Its present capacity is between 10,000 and 11,000 bbls. a day, carried in two 4-inch lines. By looping to a 6-inch line about 15 miles from the field this is to be increased to around 14,000 bbls. a day. Turner Valley operators are discussing a pipe line from the field to High River or Okotoks to facilitate rail shipments. At present the field lacks direct rail facilities.

The three prairie provinces of Alberta, Saskatchewan and Manitoba could probably absorb the entire potential output of the Alberta fields at the present time. Extension of marketing to eastern Canada or the British Columbia coast cities would, however, likely require government assistance. This, in view of the railway situation, would be likelier to take the form of subventions than either government-owned pipe lines or a tariff against imported crude. The entire situation will be studied by the federal tariff commission in the near future, with the view to mapping a policy to meet the situation.

1937 Automotive Tax

Automotive taxes will hit a new high of $1,550,000,000 in 1937, or nearly $25,000,000 more than in 1936, it is estimated by the American Petroleum Industries Committee. Less than $1,000,000,000 of that, however will find its way to road funds. The bulk, $1,145,000,000, will go to state governments in the form of gasoline taxes and registration fees. The federal government will receive as its share approximately $330,000,000, of which nearly two-thirds will be derived from the duplicating federal tax on gasoline.

The cost of automotive taxes to the average motorist will amount to approximately $51.50 in 1937. Of this amount only $32 will actually be spent on roads. The balance, $19.50, will represent an unfair levy on the motorist for general administrative purposes—taxation through misrepresentation. The "typical" motorist who pays that levy seldom draws a weekly pay envelope with more than $30 in it. For those nonearmarked funds, the "typical" motorist must work the greater part of one week.

Here's the New MARSHALLTOWN Drilling Rig Gauge Panel

This new Marshalltown Drilling Rig Gauge Panel is portable and illuminated. It protects the gauges from the heat of the boilers, the vibration of the pumps, as well as corrosion by the elements. Live steam cannot reach the gauges because of the water leg in the piping. Test gauge connections are installed on the board. Flexible connections allow for quick installation. Stirrups provide for 2" iron pipe standards.

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Marshalltown Mfg. Co.
999 Nevada St.
MARSHALLTOWN, IOWA

Summary of Operations, All Fields, October

SUMMARY OF ALL FIELDS

Wells Completed

	Comp.	Prod.	Dry	Gas
Penna Grade	574	1,093	42	88
Central Ohio	97	688	37	38
Lima	4	10	1	2
Indiana	17	10	7	8
Illinois	62	14,110	15	0
Michigan	106	34,742	31	2
Eastern Kentucky	47	982	2	20
Western Kentucky	78	1,041	42	11
Kansas	231	116,539	50	10
Oklahoma	166	27,290	43	8
N. Cen. Texas	183	22,320	75	3
West Texas	220	157,437	31	2
Texas Panhandle	104	31,547	4	22
East Texas	203	8,892	6	0
E. Cen. Texas	67	14,085	12	0
East Texas (bor.)	13	3,168	3	1
Gulf Coast Texas	153	64,305	22	8
Southwest Texas	306	25,650	86	11
North Louisiana	58	14,900	14	7
Gulf Coast, La.	34	10,184	13	1
Arkansas	30	22,898	10	0
Mississippi	2	0	2	0
Montana	22	1,410	6	1
Wyoming	9	3,608	4	1
Colorado	3	0	3	0
Utah	1	0	1	0
New Mexico	37	13,969	3	1
Total October	2,827	593,878	565	245
Total September	2,944	617,919	589	250
Difference	117	24,041	24	5

Rigs and Wells Drilling

	Rigs	Drlg.	Ttl.
Penna. Grade fields	76	509	585
Central Ohio	54	127	181
Lima	0	11	11
Indiana	0	35	35
Illinois	22	123	145
Michigan	26	172	198
Eastern Kentucky	11	51	62
Western Kentucky	1	46	47
Kansas	71	347	418
Oklahoma	44	371	415
North Central Texas	35	204	239
West Texas	87	403	490
Texas Panhandle	57	189	246
East Texas	73	119	192
East Central Texas	13	57	70
East Texas (border)	7	33	40
Gulf Coast Texas	21	156	177
Southwest Texas	66	192	258
North Louisiana	29	100	129
Gulf Coast Louisiana	17	104	121
Arkansas	10	55	65
Mississippi	5	14	19
Florida	3	0	3
Alabama	0	4	4
Montana	1	62	63
Wyoming	10	75	85
Colorado	0	36	36
Utah	0	8	8
New Mexico	15	165	180
Nebraska	0	7	7
Total October	751	3,778	4,529
Total September	797	3,944	4,741
Difference	46	166	212

OKLAHOMA

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rgs.	Dlg.	Ttl.
Adair	0	0	0	0	1	1
Atoka	1	0	1	0	1	1
Beckham	0	0	0	0	2	2
Caddo	2	40	1	2	7	9
Carter	11	257	1	1	21	22
Cleveland	1	0	1	1	3	4
Coal	2	170	0	1	5	6
Comanche	1	0	1	1	1	2
Cotton	1	0	1	1	2	3
Creek	13	557	2	2	41	43
Garvin	3	275	0	1	7	8
Grady	2	205	0	1	4	5
Grant	0	0	0	1	1	2
Haskell	0	0	0	0	1	1
Hughes	2	0	1	3	13	16
Jackson	5	32	3	0	2	2
Jefferson	3	305	0	2	10	12
Johnston	0	0	0	0	2	2
Kay	1	450	0	1	5	6
Kiowa	2	0	2	0	1	1
Latimer	2	0	1	0	0	0
Lincoln	8	2,546	1	1	11	12
Logan	5	2,540	3	1	8	9
Love	0	0	0	0	1	1
Marshall	0	0	0	0	3	3
Murray	0	0	0	0	3	3
Muskogee	3	7	1	1	7	8
Noble	5	4,787	1	1	12	13
Okfuskee	1	12	0	2	11	13
Oklahoma	0	0	0	1	10	11
Okmulgee	8	327	2	4	29	33
Osage	15	322	6	2	30	32
Payne	2	0	1	0	1	1
Pittsburg	0	0	0	0	2	2
Pawnee	3	0	3	0	2	2
Pontotoc	40	11,241	3	6	43	49
Pottawatomie	6	397	2	1	14	15
Pushmataha	0	0	0	0	1	1
Seminole	11	2,583	2	2	27	29
Stephens	3	37	1	1	12	13
Texas	0	0	0	0	2	2
Tillman	0	0	0	1	3	4
Tulsa	4	200	2	2	7	9
Washita	0	0	0	0	2	2
Ttl. Oct.	166	27,290	43	44	371	415
Ttl. Sept.	225	48,234	56	37	390	427
Difference	59	20,944	13	7	19	12

Gas well completions: Creek, 1; Hughes, 1; Latimer, 1; Muskogee, 1; Okmulgee, 1; Osage, 1; Payne, 1; Tulsa, 1; total, 8.

KANSAS

Summary of Field Operations

County:	Comp.	Prod.	Dry	Rgs.	Dlg.	Ttl.
Barber	3	0	1	2	5	7
Barton	33	15,569	5	15	43	58
Butler	6	309	2	0	17	17
Chase	0	0	0	0	1	1
Chautauqua	7	37	2	2	12	14
Clark	0	0	0	0	1	1
Coffey	1	0	1	0	1	1
Cowley	4	753	2	0	9	9
Elk	2	15	1	0	6	6
Ellis	31	40,636	2	6	30	36
Ellsworth	3	783	0	0	4	4
Ford	0	0	0	0	1	1
Grant	5	0	0	3	6	9
Greenwood	8	167	3	1	7	8
Harvey	5	1,249	2	0	4	4
Jackson	0	0	0	0	1	1
Kearny	1	0	1	0	0	0
Kingman	0	0	0	0	1	1
Logan	0	0	0	0	1	1
Marion	2	0	0	1	2	3
McPherson	5	703	3	0	16	16
Meade	0	0	0	0	1	1
Mitchell	0	0	0	0	1	1
Ness	1	50	0	1	6	7
Osborne	1	0	1	0	2	2
Pawnee	1	68	0	1	0	1
Phillips	0	0	0	0	1	1
Pratt	2	151	1	0	2	2
Reno	3	1,617	0	1	14	15
Rice	25	9,261	3	14	33	47
Rooks	3	1,035	1	2	7	9
Rush	2	586	0	0	8	8
Russell	43	38,869	2	14	51	65
Scott	1	1,149	0	0	1	1
Sedgwick	5	1,252	2	0	8	8
Stafford	9	1,592	3	2	20	22
Stevens	2	0	0	2	6	8
Sumner	2	360	1	0	7	7
Trego	2	0	2	1	3	4
Wallace	0	0	0	0	1	1
Woodson	13	328	7	3	7	10
Ttl. Oct.	231	116,539	50	71	347	418
Ttl. Sept.	278	108,145	67	68	399	467
Difference	47	8,394	17	3	52	49

Gas well completions: Barber, 2; Grant, 5; Marion, 1; Stevens, 2. Total 10.

EAST TEXAS DISTRICT

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rgs.	Dlg.	Ttl.
Anderson	6	282	6	0	0	6
Angelina	0	0	0	2	1	3
Bowie	0	0	0	0	1	1
Cherokee	0	0	0	2	4	6
Dallas	0	0	0	1	0	1
Ellis	1	0	1	0	0	0
Falls	0	0	0	0	1	1
Fanning	0	0	0	0	1	1
Franklin	18	6,129	0	4	11	15
Freestone	2	157	1	0	4	4
Gregg	96	4,556	0	33	55	88
Henderson	7	772	2	2	4	6
Hill	0	0	0	1	0	1
Hopkins	3	336	1	0	4	4
Houston	2	81	1	0	2	2
Kaufman	1	0	1	0	0	0
Lamar	0	0	0	0	1	1
Limestone	0	0	0	0	3	3
Navarro	0	0	0	0	4	4
Red River	2	0	2	0	0	0
Rusk	70	3,224	3	28	39	67
Smith	10	181	2	1	2	3
Titus	23	6,338	1	3	12	15
Upshur	27	921	1	9	19	28
Van Zandt	2	0	2	0	2	2
Ttl. Oct.	270	22,987	18	86	176	262
Ttl. Sept.	278	22,538	16	101	192	293
Difference	14	157	2	15	16	31

Gas wells completed: Anderson, 2.

TEXAS GULF COAST

Summary of Field Operations

Fieid—	Comp.	Prod.	Abd.	Rigs	Dlg.	Ttl.
Amelia	13	4,944	2	0	9	9
Anahuac	6	2,622	1	0	4	4
Bammel	1	0	0	0	0	0
Bay City	0	0	0	1	1	2
Barbers Hill	0	0	0	0	1	1
Big Hill	0	0	0	0	2	2
Buckeye	0	0	0	0	1	1
Clay Creek	0	0	0	0	1	1
Clinton	0	0	0	1	0	1
Cleveland	1	0	1	0	1	1
Cotton Lake	0	0	0	0	2	2
Dickinson	7	3,703	0	0	7	7
Edna	1	0	0	0	0	0
Esperson	1	169	0	1	0	1
Fairbanks	2	426	1	0	1	1
Fannett	0	0	0	0	1	1
Five Corners	1	29	0	0	1	1
Friendswood	2	770	0	0	1	1
Garwood	1	15	0	0	0	0
Canado	0	0	0	0	1	1
Greta	0	0	0	0	2	2
Goose Creek	1	0	1	0	1	1
Hardin	3	1,226	1	0	4	4
Hankamer	1	0	0	0	1	1
Hastings	44	24,460	0	4	23	27
Heyser	12	2,962	0	1	9	10
High Island	1	112	0	1	2	3
Hitchcock	2	0	2	0	0	0
Hull	1	0	1	0	2	2
Humble	0	0	0	0	1	1
Keeran	0	0	0	0	2	2
Labelle	0	0	0	0	1	1
Louise	1	218	0	1	0	1
Lockridge	1	624	0	0	5	5
Magnet	5	882	0	0	3	3
Manvel	1	540	0	0	1	1
McFaddin	0	0	0	0	1	1
Markham	0	0	0	0	1	1
Mykawa	1	175	0	0	1	1
Nome	0	0	0	0	4	4
North Cheek	1	690	0	0	1	1
Old Ocean	0	0	0	0	2	2
Orchard	0	0	0	0	2	2
Orange	0	0	0	0	1	1
Palacios	1	0	1	0	2	2
Pickett Ridge	1	0	0	0	1	1
Placedo	1	130	0	0	0	0
Pledger	0	0	0	0	1	1
Port Neches	0	0	0	0	1	1
Refugio	3	1,350	0	0	2	2
Sandy Point	0	0	0	0	3	3
Silsbee	2	717	0	1	2	3
Seabreeze	1	0	1	0	1	1
Segno	1	672	0	0	2	2
South Call	0	0	0	0	1	1
So. Houston	1	157	0	0	1	1
Spindletop	0	0	0	0	2	2
Spurger	0	0	0	0	1	1
Telfener	0	0	0	0	1	1
Tomball	5	2,206	1	2	3	5
Turtle Bay	3	1,121	0	0	3	3
Quintana-O'Connor	9	12,020	0	1	8	9
Van Vleck	0	0	0	0	1	1
W. Columbia	2	793	0	0	4	4
Withers	3	572	0	1	2	3
Miscellaneous	9	0	9	6	10	16
Ttl. Oct.	153	64,305	22	21	156	177
Ttl. Sept.	152	60,295	22	36	155	191
Difference	1	4,010	0	15	1	14

Gas wells completed: Amelia, 2; Anahuac, 1; Bammel, 1; Edna, 1; Hankamer, 1; Heyser, 1; Pickett Ridge, 1; Total, 8.

COASTAL LOUISIANA

Summary of Field Operations

Field:	Comp.	Prod.	Dry	Rgs.	Dlg.	Ttl.
Anse La-Butte	1	0	1	0	3	3
Abbeville	0	0	0	0	1	1
Bayou Blue	1	0	1	1	0	1
Bay St. Elaine	0	0	0	0	1	1
Bayou Cocotriz	1	934	0	0	2	2
Bayou Des Allemends	0	0	0	0	1	1
Big Lake	0	0	0	0	2	2
Black Bayou	0	0	0	0	1	1
Bosco	0	0	0	0	2	2
Caillou Is.	0	0	0	0	1	1
Cameron Meadows	0	0	0	1	1	2
Charenton	1	0	1	0	3	3
Choctaw	1	509	0	1	1	2
Darrow	0	0	0	0	1	1
Dog Lake	0	0	0	0	2	2
Edgerly	0	0	0	0	1	1
Four Isle	0	0	0	0	1	1
Gillis	1	120	0	0	2	2
Garden Is.	0	0	0	0	1	1
Hackberry	4	409	1	1	5	6
Iowa	0	0	0	0	1	1
Jeanerette	2	225	1	1	1	2
Jennings	6	3,487	2	2	13	15
Lafitte	1	1,754	0	1	2	3
Lake Barre	0	0	0	0	1	1
Lake Hermitage	0	0	0	0	1	1
Lake Washington	0	0	0	0	1	1
Lake Long	0	0	0	0	1	1
Lake Pelto	1	0	1	0	1	1
Lockport	0	0	0	0	1	1
N. Crowley	0	0	0	0	1	1
New Iberia	2	297	0	1	5	6
Port Barre	0	0	0	0	1	1
Potash	1	0	1	0	2	2
S. Roanoke	1	46	0	0	0	0
Roanoke	1	576	0	0	1	1
S. Elton	0	0	0	0	1	1
S. Jennings	0	0	0	0	1	1
Sorrento	0	0	0	0	1	1
Starks	1	200	0	1	2	3
St. Martinsville	0	0	0	0	1	1
Sulphur	2	523	0	0	3	3
Valentine	2	1,104	0	0	3	3
Venice	0	0	0	0	1	1
Vinton	0	0	0	0	3	3
White Castle	0	0	0	0	2	2
Miscel.	4	0	4	4	23	27
Ttl. Oct.	34	10,184	13	17	104	121
Ttl. Sept.	36	10,146	13	13	96	109
Difference	2	38	0	4	8	12

Gas wells completed: Hackberry, 1.

WEST TEXAS

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rgs.	Dlg.	Ttl.
Andrews	3	1,083	0	2	9	11
Bailey	0	0	0	0	2	2
Borden	0	0	0	0	1	1
Brewster	0	0	0	0	3	3
Cochran	1	0	1	1	3	4
Coke	0	0	0	0	2	2
Crane	15	26,889	4	1	14	15
Crockett	0	0	0	0	2	2
Culberson	0	0	0	0	1	1
Dawson	0	0	0	0	3	3
Ector	53	53,354	2	23	94	117
Edwards	0	0	0	1	1	2
El Paso	0	0	0	0	1	1
Fisher	4	2,843	1	7	13	20
Gaines	3	3,574	1	0	12	12
Garza	0	0	0	0	1	1
Glasscock	1	0	1	2	1	3
Hockley	1	0	1	0	1	1
Howard	9	6,014	0	8	27	35
Hudspeth	0	0	0	0	2	2
Jeff Davis	0	0	0	0	1	1
Jones	14	2,290	6	3	39	42
Loving	1	0	1	3	5	8
Martin	0	0	0	0	1	1
Nolan	1	0	1	1	0	0
Pecos	12	3,601	0	5	30	35
Presidio	0	0	0	0	1	1
Reagan	0	0	0	0	2	2
Reeves	0	0	0	0	1	1
Runnels	0	0	0	0	1	1
Schleicher	0	0	0	0	2	2
Scurry	0	0	0	0	3	3
Sterling	0	0	0	0	2	2
Stonewall	1	0	1	0	1	1
Sutton	0	0	0	0	1	1
Taylor	1	31	0	0	4	4
Terrell	0	0	0	0	1	1
Terry	1	0	1	0	0	0
Tom Green	0	0	0	0	2	2
Upton	29	13,177	3	0	30	30
Ward	28	16,264	5	12	34	46
Winkler	41	28,317	1	17	41	58
Yoakum	1	0	1	2	8	10
Ttl. Oct.	220	157,437	31	87	403	490
Ttl. Sept.	238	148,683	29	98	423	521
Difference	18	8,754	2	11	20	31

Gas wells completed: Winkler, 2; total 2.

CENTRAL AND NORTH TEXAS

County—	Comp.	Prod.	Dry	Rgs.	Dlg.	Ttl.
Archer	19	280	11	2	3	5
Baylor	2	0	2	0	1	1
Brown	1	0	1	0	4	4
Callahan	3	0	3	1	10	11
Clay	3	56	2	0	4	4
Coleman	3	0	2	0	6	6
Collin	1	0	1	0	0	0
Comanche	0	0	0	0	2	2
Cooke	13	401	3	0	3	3
Denton	1	0	1	0	7	7
Eastland	2	0	2	0	4	4
Erath	1	90	0	0	2	2
Foard	2	500	1	0	1	1
Grayson	1	37	0	0	4	4
Haskell	0	0	0	0	1	1
Jack	32	7,063	8	6	33	39
McCulloch	0	0	0	0	2	2
Montague	13	681	7	2	1	3
Palo Pinto	1	0	1	1	3	4
Shackleford	8	178	2	1	15	16
Stephens	3	33	2	0	5	5
Throckmorton	2	0	2	0	0	0
Wichita	32	5,200	9	19	50	69
Wilbarger	10	2,478	2	0	9	9
Wise	0	0	0	0	2	2
Young	30	5,332	13	3	32	35
Ttl. Oct.	183	22,329	75	35	204	239
Ttl. Sept.	233	27,710	94	21	204	225
Difference	50	5,381	19	14	0	14

Gas wells completed: Coleman, 1; Montague, 1; Young, 1; total, 3.

PANHANDLE DISTRICT

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rgs.	Dlg.	Ttl.
Briscoe	0	0	0	0	1	1
Carson	19	3,239	1	5	14	19
Cottle	0	0	0	1	0	1
Collingsworth	0	0	0	0	2	2
Deaf Smith	0	0	0	0	1	1
Dickens	0	0	0	0	1	1
Gray	21	9,256	0	19	65	84
Hall	0	0	0	0	1	1
Hansford	0	0	0	0	1	1
Hartley	0	0	0	0	1	1
Hutchinson	40	18,732	1	25	75	100
King	0	0	0	1	0	1
Moore	18	0	1	1	16	17
Ochiltree	0	0	0	0	1	1
Roberts	0	0	0	0	2	2
Sherman	0	0	0	0	1	1
Wheeler	6	320	1	5	7	12
Ttl. Oct.	104	31,547	4	57	189	246
Ttl. Sept.	71	29,167	0	65	205	270
Difference	33	2,380	4	8	16	24

Gas wells completed: Carson, 2; Hutchinson, 2; Moore, 17; Wheeler, 1; total, 22.

SOUTHWEST TEXAS

Summary of Field Operations

Field:	Comp.	Prod.	Dry	Rgs.	Dlg.	Ttl.
Agua Dulce	4	310	0	1	2	3
Alta Mesa	2	320	0	0	2	2
N. Alta Mesa	1	0	1	0	0	0
Alta Vista	1	0	1	1	1	2
Alworth	0	0	0	0	1	1
Barbacoas	0	0	0	0	1	1
Batesville	0	0	0	1	0	1
Benavides	25	4,085	1	3	15	18
Branyon	13	1,145	1	2	8	10
Bruni	3	160	0	0	2	2
Buchanan	4	215	1	0	2	2
Burdett Wells	3	115	1	0	2	2
Byersville	1	0	1	0	0	0
Calliham	2	15	0	0	0	0
Carolina-Texas	1	0	0	0	0	0
Carroll	0	0	0	1	0	1
Charamousca	0	0	0	0	1	1
Clara Driscoll	3	190	0	1	1	2
S. Clara Driscoll	0	0	0	0	1	1
Colmena	1	0	1	0	1	1
Darst Creek	6	820	1	1	4	5
Dougherty-Hicks	1	30	0	0	0	0
Driscoll	1	55	0	0	1	1
Dunlap	1	120	0	0	1	1
Escobas	7	180	1	1	2	3
Ezzell	6	1,260	1	2	5	7
Flour Bluff	9	1,310	0	1	5	6
Ft. Merrill	1	0	1	0	0	0
Gas Ridge	0	0	0	1	0	1
Govt. Wells	2	25	0	0	0	0
Hantho-Nelson	1	255	0	0	0	0
Hoffman	8	450	0	0	3	3
Joliet	1	0	1	0	0	0
Killam	12	905	1	2	2	4

Kholer	3	90	0	0	1	1
Labbe	1	0	1	0	1	1
LaBlanca	2	80	1	0	2	2
Lamar	0	0	0	0	1	1
Larremore	1	20	0	1	0	1
La Sal Vieja	0	0	0	0	1	1
Las Animas	1	0	0	0	1	1
London	1	0	1	0	0	0
Lopena	0	0	0	0	1	1
Lopez	0	0	0	0	1	1
Luby	4	575	0	1	2	3
Luling	2	150	0	1	5	6
Lundell	3	505	0	0	1	1
Lytton Spgs.	0	0	0	1	0	1
Manda	1	35	0	0	0	0
McCampbell	18	2,075	1	1	15	16
Midway	1	135	0	1	1	2
N. Dale	1	0	1	1	3	4
N. Pettus	1	20	0	0	1	1
Oakville	0	0	0	0	1	1
Oilton	25	2,895	2	3	6	9
Pearsall	0	0	0	0	2	2
Piedra Lumbre	3	430	0	0	0	0
Plummer	1	115	0	0	0	0
Plymouth	2	473	0	0	5	5
Ricaby	5	65	2	3	1	4
Rio Gde. Cty.	1	0	1	1	0	1
Salt Flats	3	365	0	1	4	5
Samfordyce	0	0	0	1	1	2
Sandia	2	0	2	0	0	0
Sarnosa	3	120	2	0	0	0
Saxet	20	2,075	3	3	17	20
Saxet Hgts.	3	170	1	1	0	1
Seven Sisters	8	860	0	1	1	2
S. Burnell	5	1,340	0	1	1	2
S. Cailliham.	0	0	0	0	1	1
Staples	1	5	0	0	0	0
Stratton	1	90	0	1	0	1
Sullivan	1	25	0	0	0	0
Sweden	1	120	0	0	1	1
Taft	4	685	0	0	1	1
Taylor	1	0	1	1	0	1
Thomas-Lockhart	1	20	0	1	1	2
Von Ormy	0	0	0	0	2	2
W. Premont	0	0	0	1	1	2
W. Tuleta	0	0	0	0	1	1
Zoboroski	2	145	0	2	1	3
Miscell.	53	0	53	20	44	64
Ttl. Oct.	306	25,650	86	66	192	258
Ttl. Sept.	260	21,755	72	79	208	287
Difference	46	3,895	14	13	16	71

Gas wells completed: Agua Dulce, 1; Benavides, 1; Bruni, 1; Carolina-Texas, 1; Government Wells, 1; Las Animas, 1; Oilton, 1; Ricaby, 2; Saxet, 2. Total 11.

NORTH LOUISIANA

Summary of Field Operations

Parish—	Comp.	Prod.	Dry	Rgs.	Dlg.	Ttl.
Bienville	1	0	1	1	2	3
Bossier	1	0	0	0	4	4
Caddo—Rodessa	4	567	1	4	11	15
Caddo—Other	14	671	1	7	25	32
Claiborne	13	8,476	2	2	13	15
Concordia	0	0	0	0	2	2
De Soto	2	0	2	1	3	4
Franklin	0	0	0	0	1	1
Jackson	0	0	0	0	1	1
LaSalle	0	0	0	2	3	5
Lincoln	7	4,460	3	2	4	6
Morehouse	1	0	0	2	2	4
Natchitoches	0	0	0	0	1	1
Ouachita	1	0	0	2	2	4
Red River	3	121	1	0	4	4
Sabine	1	5	0	1	4	5
Union	4	0	0	2	4	6
Webster	3	900	0	3	13	16
West Carroll	2	0	2	0	0	0
Winn	1	0	1	0	1	1
Ttl. Oct.	58	14,900	14	29	100	129
Ttl. Sept.	70	30,154	6	19	112	131
Difference	12	15,254	8	10	12	2

Gas wells completed: Bossier 1, 40,000,000 feet; Morehouse 1, 5,000,000 feet; Ouachita 1, 1,500,000 feet; Union 4, 22,500,000 feet; total 7, 69,000,000 feet.

ARKANSAS

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rgs.	Dlg.	Ttl.
Calhoun	0	0	0	1	1	2
Clark	1	0	1	0	1	1
Cleveland	1	0	1	0	0	0
Columbia	0	0	0	0	5	5
Critterton	0	0	0	0	1	1
Cross	1	0	1	0	0	0
Drew	0	0	0	1	0	1
Hempstead	1	0	1	0	2	2
Lafayette	1	0	1	0	1	1
Lonoke	1	0	1	0	2	2
Miller—Rodessa	19	22,206	1	5	25	30
Miller—Other	0	0	0	0	1	1
Nevada	1	0	1	0	2	2
Ouachita	2	0	2	0	1	1
Pulaski	0	0	0	0	1	1
Pike	0	0	0	0	1	1
Saline	0	0	0	0	1	1
Union	2	692	0	3	10	13
Ttl. Oct.	30	22,898	10	10	55	65
Ttl. Sept.	10	4,006	4	18	51	69
Difference	20	18,892	6	8	4	4

MISSISSIPPI

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rgs.	Dlg.	Ttl.
Bolivar	1	0	1	0	1	1
Calhoun	0	0	0	0	1	1
Claiborne	0	0	0	0	2	2
Franklin	0	0	0	0	1	1
Grenada	0	0	0	1	0	1
Harrison	0	0	0	0	1	1
Hancock	0	0	0	0	1	1
Jones	0	0	0	0	1	1
Kemper	0	0	0	1	0	1
Lamar	0	0	0	0	3	3
Pike	0	0	0	0	1	1
Simpson	0	0	0	1	0	1
Sunflower	0	0	0	1	0	1
Washington	0	0	0	0	1	1
Wilkinson	1	0	1	0	0	0
Yalobusha	0	0	0	1	1	2
Ttl. Oct.	2	0	2	5	14	19
Ttl. Sept.	1	0	0	7	13	20
Difference	1	0	2	2	1	1

EAST TEXAS (Border Counties)

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rgs.	Dlg.	Ttl.
Bowie	0	0	0	0	1	1
Cass—Rodessa	4	421	0	4	9	13
Harrison	0	0	0	0	1	1
Marion—Rodessa	6	2,747	0	2	12	14
Marion—Other	3	0	3	0	3	3
Panola	0	0	0	0	5	5
Shelby	0	0	0	1	2	3
Ttl. Oct.	13	3,168	3	7	33	40
Ttl. Sept.	20	3,821	7	9	32	41
Difference	7	653	4	2	1	1

Gas wells completed: Cass, 1, 3,000,000 feet.

ALABAMA

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rgs.	Dlg.	Ttl.
Choctaw	0	0	0	0	1	1
Houston	0	0	0	0	1	1
Mobile	0	0	0	0	1	1
Ttl. Oct.	0	0	0	0	3	3
Ttl. Sept.	0	0	0	0	3	3
Difference	0	0	0	0	0	0

FLORIDA

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rgs.	Dlg.	Ttl.
Lake	0	0	0	0	2	2
Nassau	0	0	0	0	1	1
Suwannee	0	0	0	0	1	1
Ttl. Oct.	0	0	0	0	4	4
Ttl. Sept.	0	0	0	0	4	4
Difference	0	0	0	0	0	0

EASTERN KENTUCKY

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rgs	Dlg.	Ttl.
Knott	4	0	0	4	9	13
Floyd	12	30	1	1	13	14
Martin	8	36	1	2	7	9
Pike	1	0	0	0	2	2
Magoffin	3	14	0	0	8	8
Powell	5	41	0	2	2	4
Johnson	1	0	0	0	0	0
Perry	0	0	0	0	1	1
Knox	0	0	0	1	0	1
Lawrence	2	6	0	0	2	2
Lee	11	855	0	1	7	8
Ttl. Oct.	47	982	2	11	51	62
Ttl. Sept.	23	238	6	5	34	39
Difference	24	744	4	6	21	26

Gas wells completed: Knott, 4; Floyd, 9; Martin, 5; Pike, 1; Johnson, 1; total, 20.

WESTERN KENTUCKY

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rgs	Dlg.	Ttl.
Breckenridge	7	0	4	0	3	3
Butler	2	0	2	0	1	1
Caldwell	0	0	0	0	1	1
Daviess	9	80	5	0	6	6
Grayson	0	0	0	0	1	1
Hancock	22	199	12	1	6	7
Henderson	4	215	0	0	1	1
McLean	8	450	4	0	9	9
Ohio	25	77	15	0	15	15
Union	1	20	0	0	0	0
Webster	0	0	0	0	3	3
Ttl. Oct.	78	1,041	42	1	46	47
Ttl. Sept.	76	930	32	0	48	48
Difference	2	111	10	1	2	1

Gas wells completed: Breckenridge, 3; Daviess, 1; Hancock, 5; Ohio, 2; total, 11.

ROCKY MOUNTAIN AREA

Colorado

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rgs	Dlg.	Ttl.
Adams	0	0	0	0	2	2
Archuleta	0	0	0	0	4	4
Boulder	0	0	0	0	2	2
Huerfano	0	0	0	0	2	2
Kiowa	1	0	1	0	0	0
La Plata	0	0	0	0	3	3
Larimer	0	0	0	0	2	2
Lincoln	0	0	0	0	2	2
Mesa	0	0	0	0	2	2
Moffat	0	0	0	0	2	2
Park	0	0	0	0	3	3
Rio Blanco	2	0	2	0	2	2
Miscellaneous	0	0	0	0	10	10
Ttl. Oct.	3	0	3	0	36	36
Ttl. Sept.	8	0	7	1	39	40
Difference	5	0	4	1	3	4

New Mexico

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rgs.	Dlg.	Ttl.
Bernalillo	0	0	0	0	1	1
McKinley	0	0	0	0	5	5
Santa Fe	0	0	0	0	2	2
San Juan	1	43	0	0	5	5
San Miguel	0	0	0	0	3	3
Socorro	0	0	0	0	1	1
Torrance	0	0	0	0	1	1
Valencia	0	0	0	0	3	3
Lea	35	13,906	3	10	103	113
Eddy	1	20	0	4	34	38
Chaves	0	0	0	1	2	3
Curry	0	0	0	0	1	1
Dona Ana	0	0	0	0	1	1
Otero	0	0	0	0	2	2
Roosevelt	0	0	0	0	1	1
Ttl. Oct.	37	13,969	3	15	165	180
Ttl. Sept.	65	50,048	6	14	153	167
Difference	28	36,079	3	1	12	13

Gas wells completed: Lea, 1.

Wyoming

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rgs	Dlg.	Ttl.
Albany	3	480	2	2	4	6
Big Horn	1	2,880	0	0	5	5
Carbon	1	0	1	4	6	10
Converse	0	0	0	1	7	8
Fremont	0	0	0	0	5	5
Hot Springs	0	0	0	0	2	2
Lincoln	0	0	0	0	4	4
Natrona	0	0	0	0	7	7
Niobrara	2	163	1	2	14	16
Park	1	0	0	0	3	3
Sweetwater	0	0	0	1	5	6
Sublet	1	85	0	0	1	1
Uinta	0	0	0	0	3	3
Weston	0	0	0	0	7	7
Miscellaneous	0	0	0	0	2	2
Ttl. Oct.	9	3,608	4	10	75	85
Ttl. Sept.	15	5,476	6	5	71	79
Difference	7	1,860	2	5	1	6

Gas well completed: Park, 1.

Montana

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rgs	Dlg.	Ttl.
Big Horn	0	0	0	0	3	3
Carbon	1	0	1	0	6	6
Fergus	0	0	0	0	6	6
Glacier	8	575	2	0	7	7
Hill	1	0	1	0	0	0
Petroleum	1	0	1	0	2	2
Phillips	0	0	0	0	2	2
Pondera	0	0	0	1	1	2
Toole	11	835	1	0	21	21
Yellowstone	0	0	0	0	3	3
Miscellaneous	0	0	0	0	11	11
Ttl. Oct.	22	1,410	6	1	62	63
Ttl. Sept.	24	820	5	5	73	78
Difference	2	590	1	4	11	15

Gas wells completed: Glacier, 2.

Utah

Summary of Field Operations

	Comp.	Prod.	Dry	Rgs	Dlg.	Ttl.
Carbon	1	0	1	0	0	0
Miscellaneous	0	0	0	0	8	8
Ttl. Oct.	1	0	1	0	8	8
Ttl. Sept.	1	0	1	0	9	9
Difference	0	0	0	0	1	1

Nebraska

Summary of Field Operations

	Comp.	Prod.	Dry	Rgs	Dlg.	Ttl.
Ttl. Oct.	0	0	0	0	7	7
Ttl. Sept.	0	0	0	0	7	7
Difference	0	0	0	0	0	0

MICHIGAN

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rgs	Dlg.	Ttl.
Adams	0	0	0	0	4	4
Bentley	0	0	0	0	2	2
Bloomfield	0	0	0	0	1	1
Beaverton	1	0	1	0	1	1
Buckeye	16	7,033	2	4	26	30
Clayton	3	250	2	3	13	16
Crystal	1	0	1	0	2	2
Currie	1	0	1	0	0	0
Curtice	1	0	1	0	1	1
Leaton	0	0	0	0	1	1
Meoosta	2	0	0	0	1	1
Mt. Pleasant	0	0	0	0	1	1
North Gibson	0	0	0	0	0	0
Porter Yost	2	40	0	0	4	4
Ravenna	0	0	0	0	2	2
Rosebush	1	10	0	0	0	0
Salem	15	7,380	2	1	8	9
Sherman	4	694	0	1	7	8
Trowbridge	0	0	0	0	7	7
West Branch	12	3,040	2	4	34	38
Winegars	27	16,277	0	0	1	1
Wisner	0	0	0	0	1	1
Miscellaneous	20	18	19	13	55	68
Ttl. Sept.	106	34,742	31	26	172	198
Ttl. Oct.	85	20,051	26	26	172	198
Difference	21	14,691	5	0	0	0

Gas wells completed: Mecosta, 2.

OHIO

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rgs	Dlg.	Ttl.
Ashland	3	0	1	2	2	4
Ashtabula	0	0	0	0	0	0
Athens	12	5	7	2	5	7
Belmont	3	0	1	1	3	4
Coshocton	3	135	1	1	2	5
Cuyahoga	1	0	1	1	2	3
Fairfield	2	0	1	2	1	3
Gallia	0	0	0	0	0	0
Guernsey	9	0	3	2	5	7
Hocking	3	0	1	1	1	2
Holmes	1	0	1	1	1	2
Huron	0	0	0	0	3	3
Knox	6	250	3	3	7	10
Lawrence	0	0	0	0	0	0
Licking	5	32	0	5	11	16
Lorain	1	0	1	4	4	8
Medina	3	4	0	0	0	0
Meigs	7	0	3	4	9	13
Monroe	3	9	1	1	8	9
Morgan	4	2	1	1	4	5
Muskingum	5	215	0	4	8	12
Noble	3	0	1	2	8	10
Perry	5	1	2	4	6	10
Portage	0	0	0	0	0	0
Richland	0	0	0	0	1	1
Scioto	1	0	1	0	0	0
Stark	4	0	3	2	9	9
Summit	0	0	0	4	3	7
Trumbull	0	0	0	0	0	0
Tuscarawas	3	0	1	2	8	10
Vinton	1	0	0	0	0	0
Washington	7	3	3	3	16	19
Wayne	2	32	0	1	0	1
Ttl. Oct.	97	688	37	54	127	181
Ttl. Sept.	118	477	43	51	145	196
Difference	21	211	6	3	18	15

Gas wells completed: Ashland, 2; Athens, 3; Belmont, 2; Fairfield, 1; Guernsey, 6; Hocking, 2; Knox, 1; Licking, 1; Medina, 2; Leigs, 4; Morgan, 2; Noble, 2; Perry, 2; Stark, 1; Tuscarawas, 2; Vinton, 1; Washington, 3; Wayne, 1; total, 38.

INDIANA

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rgs	Dlg.	Ttl.
Crawford	0	0	0	0	1	1
Daviess	2	0	1	0	2	2
DeKalb	0	0	0	0	1	1
Gibson	4	5	2	0	2	2
Greene	1	0	1	0	0	0
Hamilton	0	0	0	0	1	1
Harrison	1	0	0	0	1	1
Huntington	0	0	0	0	1	1
Jay	0	0	0	0	1	1
Knox	1	0	1	0	1	1
Lagrange	0	0	0	0	2	2
Perry	1	0	1	0	4	4
Pike	4	0	0	0	5	5
Porter	0	0	0	0	1	1
Posey	0	0	0	0	2	2
Rush	0	0	0	0	1	1
Spencer	0	0	0	0	1	1
Sullivan	1	5	0	0	3	3
Vandenburgh	0	0	0	0	1	1
Vigo	0	0	0	0	3	3
Wabash	1	0	0	0	0	0
Warrick	0	0	0	0	1	1
Wells	1	0	1	0	0	0
Ttl. Oct.	17	10	7	0	35	35
Ttl. Sept.	17	76	8	0	39	39
Difference	0	66	1	0	4	4

Gas wells completed: Daviess, 1; Gibson, 1; Pike, 4; Harrison, 1; Wabash, 1; total, 8.

ILLINOIS

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rgs.	Dlg.	Ttl.
Bond	1	0	0	0	2	2
Clark	0	0	0	0	1	1
Clay	24	8,237	4	7	25	32
Christian	0	0	0	0	2	2
Edwards	0	0	0	0	1	1
Fayette	1	0	1	1	3	4
Richland	9	5,029	1	7	22	29
Randolph	0	0	0	0	1	1
Marion	17	683	2	0	24	24
Clinton	5	160	3	2	7	9
Wayne	0	0	0	2	5	7
Perry	0	0	0	0	1	1
Jefferson	0	0	0	1	3	4
Crawford	1	0	1	0	1	1
McDonough	2	1	1	0	0	0
Lawrence	0	0	0	0	1	1
Effingham	1	0	1	1	1	2
Massac	0	0	0	0	1	1
Coles	0	0	0	1	1	2
White	0	0	0	0	1	1
Washington	0	0	0	0	1	1
Hamilton	0	0	0	0	3	3
Jasper	1	0	1	0	0	0
Pope	0	0	0	0	1	1
Montgomery	0	0	0	0	2	2
Bureau	0	0	0	0	1	•1
DeKalb	0	0	0	0	2	•2
Greene	0	0	0	0	1	•1
Iroquois	0	0	0	0	1	•1
Kane	0	0	0	0	1	•1
Madison	0	0	0	0	1	•1
Rock Island	0	0	0	0	1	•1
Vermilion	0	0	0	0	1	1
Will	0	0	0	0	1	•1
Franklin	0	0	0	0	1	1
Cumberland	0	0	0	0	1	1
Hardin	0	0	0	0	1	•1
Ttl. Oct.	62	14,110	15	22	123	145
Ttl. Sept.	72	15,337	18	25	96	121
Difference	10	1,227	3	3	27	24

•Drilling wells shut down.

PENNA. GRADE FIELDS

Summary of Field Operations

	Comp.	Prod.	Dry	Rgs.	Dlg.	Ttl.
Bradford	•223	248	0	11	88	99
Allegany	†117	58	0	3	59	62
N. Y.-Penn gas fields	5	0	0	9	25	34
Venango-Clarion	‡49	46	2	6	14	20
Butler-Armstrong	9	16	1	3	13	16
Southwest Penna.	25	62	7	8	41	49
Southeastern Ohio	39	544	8	11	59	70
W. Virginia	107	119	24	25	210	235
Ttl. Oct.	574	1,093	42	76	509	585
Ttl. Sept.	581	966	45	94	560	654
Difference	7	127	3	18	51	69

Gas wells completed: N. Y.-Penn. gas field, 5; Venango-Clarion, 2; S.W. Penna., 11; S.E. Ohio, 9; West Virgina, 61; total 88. •Includes 90 water intake wells. †Includes 59 water intake wells. ‡Includes 9 pressure wells.

WILDCAT OPERATIONS

CALIFORNIA

IMPORTANT WELLS AND NORTHERN CALIFORNIA WILDCATS

Company, well and location—	S.T.R.	Depth	Status
Hancock-Bush, No. 1-W Santa Maria, Santa Barbara	25-10-34	4,277	sd. sh. drlg.
Hancock-Bush, No. 2 C.L., Santa Maria, Santa Barbara	30-10-33	3,594	sd. sh. drlg.
Macrate, A. N., No. 2-R Santa Maria, Santa Barbara	23-10-34	1,791	sd. sh. drlg.
York Oil, No. 1 Doane, Santa Maria, Santa Barbara	27-10-34	3,482	sd. sh. drlg.
Pet. Prop. Inc., No. 1-R Santa Maria, Santa Barbara	19-10-33	2,321	Schist
Sunshine Oil, No. 1-W Santa Maria, Santa Barbara	27-10-34	4,182	sd. sh. drlg.
Linnell Oil Co., No. 1 Santa Maria, Santa Barbara Co.	23-10-34	3,211	sd. sh. drlg.
Jones, Frank, No. 1 Santa Maria, Santa Barbara Co.	26-10-34	3,960	sd. sh. drlg.
Moore, E. H., No. 3 Sugar, Santa Maria, Santa Barbara	24-10-35	3,941	sd. sh. drlg.
Moore, E. H., No. 4 Sugar, Santa Maria, Santa Barbara	19-10-34	3,544	sd. sh. drlg.
Moore, E. H., No. 5 Sugar, Santa Maria, Santa Barbara	25-10-35	2,761	sd. sh. drlg.
Signal Oil, No. 1 Libeu, Santa Maria, Santa Barbara	26-10-34	2,995	sd. sh. drlg.
Union Oil, No. 3 Russell, Santa Maria, Santa Barbara	30-10-33	3,605	sd. sh. drlg.
Union Oil, No. 1 Vicente, Santa Maria, Santa Barbara	21-10-34	3,680	sd. sh. drlg.
Union Oil, No. 2 LeRoy, Santa Maria, Santa Barbara	24-10-35	5,230	cleaning out
Union Oil, No. 17 Cal. Coast, Orcutt, Santa Barbara	27- 9-34	3,672	sd sh. drlg.
Dougan Oil, No. 1 Yelkin, Santa Maria, Santa Barbara	27-10-34	1,892	sd. sh. drlg.
O'Donnell, J. E., No. 1 Santa Maria, Santa Barbara Co.	21-10-34	4,541	sd. sh. drlg.
Getty, George F., No. 1 Santa Maria, Santa Barbara	27-10-34	3,495	sd. sh. drlg.
Pac. West. Oil, No. 3-H Santa Maria, Santa Barbara	21-10-34	4,264	sd. sh. drlg.
Pac. West. Oil, No. 5-H Santa Maria, Santa Barbara	21-10-34	3,290	sd. sh. drlg.
Pac. West. Oil, No. 1-S Santa Maria, Santa Barbara	27-10-34	2,992	sd. sh. drlg.
Tide Water A. O., No. 1-L Santa Rita, Santa Barbara	3- 6-33	4,950	dry; abd.
Texas Co., No. 134 Shiells, Ventura Co.	4- 3-19	4,165	sd. sh. drlg.
Richfield Oil, No. 1 McFarland, Camarillo, Ventura	13- 2-21	4,885	hd. sh. drlg.
S. Cal. Drlg., No. 1 McFarland, Camarillo, Ventura	26- 2-21	1,975	sd. sh. drlg.
Condor Oil Co., No. 1 Sespe, Ventura Co.	6- 4-19	2,193	cleaning out
Ivers, H. A., No. 14 Star, Sespe, Ventura Co.	1- 4-20	1,610	sd. sh. drlg.
Section 20 Oil Co., No. 1 Sespe, Ventura Co.	20- 5-19	589	hd. sh. drlg.
Speik Oil Co., No. 2 Sespe, Ventura Co.	33- 5-19	3,275	sd. sh. drlg.
Colima Oil Co., No. 2 Sespe, Ventura Co.	25- 5-19	3,500	cleaning out
Topa Topa Oil Co., No. 3 Sespe, Ventura Co.	33- 5-19	4,410	sidetracking
Skyline Oil Co., No. 1-H Hopper Canyon, Ventura Co.	13- 4-18	1,565	sd. sh. drlg.
Continental Oil, No. 8 Grubb, San Miguelita, Ventura	30- 3-23	3,937	will redrl.
C. C. M. Oil Co., No. 2 Padre Canyon, Ventura Co.	23- 3-24	7,828	P.B. 6,625
Continental Oil, No. 4 Padre Canyon, Ventura Co.	15- 3-24	5,983	sd. sh. drlg.
C. C. M. Oil Co., No. 11 Rincon, Ventura Co.	17- 3-24	3,208	will deepen
Oxnard Oil Co., No. 1 Oxnard, Ventura Co.	10- 1-22	6,302	P.B. 6,200
Tide Water A. O., No. 32 V.L.W., Ventura, Ventura	24- 3-23	5,181	sd. sh. drlg.
Tide Water A. O., No. 30 Lloyd, Ventura, Ventura	27- 3-23	6,880	sd. sh. drlg.
Tide Water A. O., No. 63 Lloyd, Ventura, Ventura	27- 3-23	4,810	cmtd. 4,635
Tide Water A. O., No. 69 Lloyd, Ventura, Ventura	27- 3-23	1,925	sd. sh. drlg.
Tide Water A. O., No. 135 Lloyd, Ventura, Ventura	27- 3-23	7,574	rigged up
Tide Water A. O., No. 138 Lloyd, Ventura, Ventura	23- 3-23	4,698	sd. sh. drlg.
Tide Water A. O., No. 18 Hartman, Ventura, Ventura	22- 3-23	8,031	hd. sh. drlg.
Tide Water A. O., No. 27 Hartman, Ventura, Ventura	22- 3-23	6,585	sd. sh. drlg.
Shell Oil Co., No. 92 Taylor, Ventura Ave., Ventura	20- 3-23	3,690	sd. sh. drlg.
General Pet. Corp., No. 13 Notten, Ventura, Ventura	28- 3-23	8,675	sd. sh. drlg.
Tide Water A. O., No. 10-E-3 Lost Hills, Kern Co.	3-26-20	2,067	depening
Texas Co., No. 2-27 Theta, Lost Hills, Kern Co.	2-26-20	1,134	pump. 60 b.d.
Standard Oil Co., No. 6 United, Lost Hills, Kern Co.	2-26-20	1,592	bailing
Standard Oil Co., No. 7 United, Lost Hills, Kern Co.	2-26-20	1,294	sd. sh. drlg.
Amerada Pet. Corp., No. 5 Beer, Devils Den, Kern Co.	22-26-19	3,302	sd. sh. drlg.
Franco-Western Oil Co., No. 14, McKittrick, Kern Co.	8-30-22	1,571	br. sh. drlg.
Par Mer Oil Co., No. 1 McKittrick, Kern Co.	6-31-22	1,530	br. sh. drlg.
Michels, George, No. 1 Ynez, Temblor, Kern Co.	36-29-20	1,610	P.B. 435
Standard Oil Co., No. 2 Randolph, Semi-Tropic, Kern	14-27-23	7,100	sd. sh. drlg.
Continental Oil Co., No. 2 Wasco, Kern Co.	8-27-24	11,584	fish. D.P.
Belridge Oil Co., No. 43-26 North Belridge, Kern Co.	26-27-20	8,105	br. sh. drlg.
Belridge Oil Co., No. 27-8 North Belridge, Kern Co.	27-27-20	4,497	br. sh. drlg.
Belridge Oil Co., No. 61-27 North Belridge, Kern Co.	27-27-20	4,473	sd. sh. drlg.
Tide Water A. O., No. 7 North Belridge, Kern Co.	34-27-20	4,791	sh. sh. drlg.
Tide Water A. O., No. 1-21 North Belridge, Kern Co.	21-27-20	3,687	sd. sh. drlg.
Texas Co., No. 2 Martin, North Belridge, Kern Co.	22-27-20	2,679	sd. sh. drlg.
General Pet. Corp., No. 1 St. Helens, Belridge, Kern	12-28-20	2,607	sd. sh. drlg.
Eastmont Oil, No. 6 Olcese, Round Mountain, Kern	16-28-29	1,293	sd. sh. drlg.
Fremont Oil, No. 2 Olcese, Round Mountain, Kern Co.	35-28-29	1,471	sd. sh. drlg.
Link Trucking Co., No. 1 Round Mountain, Kern Co.	30-28-29	1,695	C.P. 1,350
Shell Oil Co., No. 16 Freeman, Round Mountain, Kern	20-28-29	1,393	sd. sh. drlg.
Cal-Western Oil, No. 7 C.C., Round Mountain, Kern	12-28-28	1,845	O.S. drlg.
Vedder, D. G., No. 1 Bell, Round Mountain, Kern Co.	12-28-28	1,798	sd. sh. drlg.
L. A. Const. Co., No. 1 Tavis, Round Mountain, Kern	4-29-29	3,259	cleaning out
Standard Oil Co., No. 8 Ward, Kern Front, Kern Co.	24-28-27	1,771	sd. sh. drlg.
Malone, F. H., No. 3 Mabry, Kern Front, Kern Co.	4-28-27	2,726	idle
California Star Oil Co., No. 3-80 Kern Front, Kern Co.	22-28-27	2,755	recmtd. 2,410
Kern River Oilfields, No. 25-3-B Kern Front, Kern Co.	25-28-27	1,763	sd. sh. drlg.
Texas Co., No. 11 Lehman, Kern Front, Kern Co.	23-28-27	2,057	pump. 110 b.d.
Union Oil Co., No. 8 Del Rey, Kern Front, Kern Co.	11-28-27	1,900	cleaning out
Morrison, C. S., No. 14-H, Kern River, Kern Co.	2-29-28	253	sd. sh. drlg.
Vedder, D. G., No. 4 B.N.B., Mount Poso, Kern Co.	32-26-28	193	sd. sh. drlg.
Ring Oil Co., No. 3 Bohen, Mount Poso, Kern Co.	32-26-28	1,670	pump. 392 b.d.
Ring Oil Co., No. 2 Louden, Mount Poso, Kern Co.	32-26-28	1,763	sd. sh. drlg.
Sunset Oil Co., No. 1 S.P., Mount Poso, Kern Co.	3-27-28	1,426	sd. sh. drlg.
Texas Co., No. 12 Vedder, Mount Poso, Kern Co.	4-28-28	1,563	sd. sh. drlg.
Vedder Pet., No. 29-2 Lambert, Mount Poso, Kern Co.	29-26-28	1,807	P.B. 1,778
Bargol Oil Co. No. 3 Newhope, Mount Poso, Kern Co.	11-27-27	1,235	bailing
Pebble Beach Oil, No. 5 Newhope, Mount Poso, Kern	29-27-27	1,418	sd. sh. drlg.
Framac Oil Co., No. 1 Brown, Mount Poso, Kern Co.	22-27-27	1,351	fish. D.P.
Hobbee Oil Co., No. 3 McVan, Mount Poso, Kern Co.	14-27-27	1,185	billing
Vanguard Oil Co., No. 15 Baker, Mount Poso, Kern	33-27-28	1,758	O.S. drlg.
Meridan Oil Co. No. 7 Turner, Fruitvale, Kern Co.	23-29-27	3,038	sd. sh. drlg.
Simmel, L. C., No. 2 Fruitvale, Kern Co.	23-29-27	3,772	O.S. drlg.
Western Gulf Oil, No. 10 Red Ribbon, Fruitvale, Kern	27-29-27	3,407	sd. sh. drlg.
Sandy Oil Co., No. 2 Fruitvale, Kern Co.	26-29-27	3,590	P.B. 3,317
Section Six Oil Co., No. 1 Mountain View, Kern Co.	6-31-29	6,176	sd. sh. drlg.
American Expl. Co., No. 1-G Mountain View, Kern Co.	18-30-29	4,792	redrlg. 4,702
Ohio Oil Co., No. 6 Derby, Mountain View, Kern Co.	33-30-29	5,292	pump. 112 b.d.
Vesta Oil Co., No. 12 Mountain View, Kern Co.	19-30-29	4,761	sd. sh. drlg.
Hogan Pet. Co., No. 5 Symons, Mountain View, Kern	4-31-29	5,381	P.B. 5,320
North American Consd., No. 2-T Mountain View, Kern	9-31-2	5,425	sd. sh. drlg.
Petrol. Prod. Co., No. 1 Fruit, Mountain View, Kern	4-31-29	5,815	rig to pump
Westbrook Oil Co., No. 1 Edison, Kern Co.	4-30-29	2,680	sd. sh. drlg.
Wood-Callahan Oil, No. 1 Harvey, Edison, Kern Co.	21-30-29	4,450	redrlg. 3,591
General Petroleum, No. 1 Houchin, Arvin, Kern Co.	27-31-29	7,562	sd. sh. drlg.
Union Oil Co., No. 1-34 Rio Bravo, Kern Co.	34-28-25	11,302	flow. 1,150 b.d.
Continental Oil Co., No. 1 Rosedale, Kern Co.	12-29-26	10,210	redrlg. 7,651
Superior Oil Co., No. 1 Krause, Greeley, Kern Co.	21-29-26	1,995	sh. sh. drlg.
Superior Oil Co., No. 9 KCL, Greeley, Kern Co.	3-30-26	7,870	swabbing
Superior Oil Co., No. 10 KCL, Greeley, Kern Co.	3-30-26	4,290	sd. sh. drlg.
Standard Oil Co., No. 11-8 KCL, Greeley, Kern Co.	18-29-26	7,426	fish; abd.
Standard Oil Co., No. 11-9 KCL, Greeley, Kern Co.	20-29-26	7,740	sd. sh. drlg.
Standard Oil Co., No. 11-10 KCL, Greeley, Kern Co.	17-29-26	7,762	sh. sh. drlg.
Standard Oil Co., No. 11-11 KCL, Greeley, Kern Co.	17-29-26	1,060	sd. sh. drlg.
Standard Oil Co., No. 1-F Greeley, Kern Co.	20-29-26	7,751	sd. sh. drlg.
Standard Oil Co., No. 15-1 KCL, Ten Section, Kern	27-30-26	6,350	sd. sh. drlg.
Standard Oil Co., No. 17-1 KCL, Ten Section, Kern	9-29-26	5,543	sd. sh. drlg.
Shell Oil Co., No. 8-28-A KCL, Ten Section, Kern Co.	28-30-26	8,288	sd. sh. drlg.
Shell Oil Co., No. 36-30-A KCL, Ten Section, Kern Co.	30-30-26	6,986	sd. sh. drlg.
Ohio Oil Co., No. 3-E KCL, Ten Section, Kern Co.	14-30-25	8,175	O.S. drlg.
Standard Oil Co., No. 1 Magunden, Kern Co.	2-30-28	4,860	sd. sh. drlg.
Monticello Oil Co., No. 4 Midway-Sunset, Kern Co.	27-31-22	1,544	br. sh. drlg.
U. S. Pump & Equip. Co., No. 2 Midway-Sunset, Kern	12-11-24	1,775	sd. sh. drlg.
C C M Oil Co., No. 55-21 Midway-Sunset, Kern Co.	21-32-23	2,137	sd. sh. drlg.
Hallmark Oil Co., No. 9 Midway-Sunset, Kern Co.	25-12-24	2,430	sd. sh. drlg.
Brookshire Oil Co., No. 3 Midway-Sunset, Kern Co.	24-31-22	2,524	pump. test
Hoyt, Otis, No. 7 Midway-Sunset, Kern Co.	7-11-23	1,844	pump. 120 b.d.
Richfield Oil, No. 14 Fellows, Midway-Sunset, Kern	6-32-23	1,166	O.S. drlg.
Standard Oil, No. 19 Monarch, Midway-Sunset, Kern	26-12-24	2,700	sd. sh. drlg.
Standard Oil, No. 2-25-L Midway-Sunset, Kern Co.	25-12-24	3,012	sd. sh. drlg.
Honolulu Oil Corp., No. 26-A Midway-Sunset, Kern	14-32-24	3,220	pump. 220 b.d.
National Oil Co., No. 30 Midway-Sunset, Kern Co.	35-32-23	1,951	gr. sd. drlg.
Gibson Oil, No. 5 O'Brien, Midway-Sunset, Kern Co.	6-11-23	2,831	redrlg. 801
Texas Co., No. 1 Pioneer, Midway-Sunset, Kern Co.	33-11-23	4,754	hd. sh. drlg.
Texas Co., No. 25 Midway-Sunset, Kern Co.	32-32-24	3,170	pump. 25 b.d.
Texas Co., No. 26 Midway-Sunset, Kern Co.	32-32-24	3,249	cleaning out
Texas Co., No. 27 Midway-Sunset, Kern Co.	32-32-24	2,917	P.B. 2,884

KEY TO ABBREVIATIONS USED IN DRILLING REPORTS

Abd., abandoned.
Bldg., building.
B.D., barrels daily.
B.P., back pressure.
B.R., building rig.
Br. sh., brown shale.
B.S., basic sediment.
C.P., casing pressure.
Cd. or Crd., cored.
C.D., corrected depth.
Cg., coring.
C.L., center line.
Cmtd., cemented.
C.O., cleaning out.
Comp., completed.
Compr., compressor.
C.P., casing pressure, also cement through perforations.
Csg., casing.
D.D., drilling (or drilled) deeper.
Drlg. or Drg., drilling.
Drk. or Dk., derrick.
D.S., drill stem.
D.&A., dry and abandoned.
Fsg., fishing.
Gbo., gumbo.
G.I., gas injection.
Gr., gravity.
Gr. sd., gray sand.
Grn. sh., green shale.
Hd. sd., hard sand.
H.F.W., hole full of water.
I.P., initial production.
L., lime.
L.D.D., later drilled deeper.
Lnr., liner.
Loc., location.
M.I.M., moving in material.
M.I.R., moving in rig.
M.I.R.T., moving in rotary tools.
M.O.T., milling on tools.
O.I.H., oil in hole.
O.S., oil sand.
O.T.D., old total depth.
O.W.D.D., old well drilling deeper.
O.W.P.B., old well plugging back.
P.B., plugging or plugged back.
P.B.P., plugging big pipe.
P.L., pipe line.
P.L.O., pipe line oil.
Pmpg., pumping.
P.O.P., putting on pump.
P.P., pulled pipe.
Rd. sd., red sand.
Rd. sh., red shale.
Recmt., recemented.
Rmg., reaming.
Redrlg., redrilling.
Rng., running.
R.O.G., rig on ground.
R.P., rock pressure.
R.U., rigging up.
R.U.R., rigging up rotary.
R.U.R.T., rigging up rotary tools.
R.U.S.T., rigging up standard tools.
R.&T., rods and tubing.
S. or Sd., sand.
S.D., shut down.
Sdy. sh., sandy shale.
Sdtr., or St., sidetracking.
S.D.P.L., shut down for pipe line.
S.D.W.O., shut down awaiting orders.
S.G., show gas.
Sh.&L., shale and lime.
S.I., shut in.
S.I.P., shut in, prorated.
S.L.M., steel line measurement.
S.O., show oil.
S.O.G.&W., show of oil, gas and water.
Spdg. or Spd., spudding.
S.R., straightreaming.
Stdg., standardizing (also standing).
S.W., salt water.
Swbg., swabbing.
T.A., temporarily abandoned.
Tbg., tubing.
T.D., total depth.
T.P., tubing pressure.
Tr., tract.
U.R., underreaming.
W.I.H., water in hole.
W.O., workover.
W.O.C. or W.O.C.S., waiting on cement to set.
W.P., working pressure.
W.S.O., water shutoff.
W.S.S.O.K., water shutoff O.K.
W.S.O.N.G., water shut off no good.
W.S.R. or W.O.S.R., wait on standard rig.
Wtr., water.

Texas Co., No. 28 Midway-Sunset, Kern Co.	32-32-24	2,812	sd. sh. drlg.
Richfield Oil Corp., No. 1-H-A Elk Hills, Kern Co.	1-31-24	3,005	sd. sh. drlg.
Universal Oil Co. No. 1 Tejon, Kern Co.	33-11-19	1,971	sd. sh. drlg.
Central Valley Oil Co., No. 1 Fresno, Fresno Co.	1-12-20	132	idle
Bergman, Harry, No. 1 Dos Palos, Fresno Co.	12-12-11	6,138	will deepen
Pure Oil Co., No. 1 Canuta, Fresno Co.	31-18-17	7,797	sd. sh. drlg.
Dauphin Dev. Co., No. 1 Alcade, Fresno Co.	30-21-14	1,880	sd. sh. drlg.
Jacalitos Oil Co., No. 1 Jacalitos, Fresno Co.	14-21-15	3,995	sd. sh. drlg.
K. N. D. A., No. 4-18-J Kettleman North, Fresno Co.	18-21-17	11,746	gr. sd. drlg.
K. N. D. A., No. 43-34-J Kettleman North, Fresno Co.	34-21-17	7,380	sd. sh. drlg.
K. N. D. A., No. 41-4-P Kettleman North, Fresno Co.	4-22-17	8,065	flow. 2,525 b.d.
K. N. D. A., No. 83-4-P Kettleman North, Fresno Co.	4-22-17	6,974	br. sh. drlg.
K. N. D. A., No. 27-12-P Kettleman North, Kings Co.	12-22-17	6,831	cmtd. 6,482
K. N. D. A., No. 38-12-P Kettleman North, Kings Co.	12-22-17	5,814	br. sh. drlg.
K. N. D. A., No. 6-6-Q Kettleman North, Kings Co.	6-22-18	8,066	cmtd. 8,065
K. N. D. A., No. 27-6-Q Kettleman North, Kings Co.	6-22-18	7,770	sd. sh. drlg.
Standard Oil, No. 27-21-J Kettleman North, Fresno	21-21-17	7,200	br. sh. drlg.
Standard Oil, No. 27-33-J Kettleman North, Fresno	33-21-17	8,350	sd. sh. drlg.
Standard Oil, No. 2-11-P Kettleman North, Kings Co.	11-22-17	7,000	br. sh. drlg.
Standard Oil, No. 76-1-P Kettleman North, Kings Co.	1-22-17	6,215	sd. sh. drlg.
Standard Oil, No. 21-13-P Kettleman North, Kings	13-22-17	3,961	sd. sh. drlg.
Superior O., No. 1 Huffman, Kettleman North, Fresno	29-21-17	10,120	coring
Temblor Oil, No. 1-B Kettleman Middle, Kings Co.	25-23-18	8,520	hd. sh. drlg.
Pyramid Prod., No. 1 Pyramid Hills, Kings Co.	27-24-18	755	sd. sh. drlg.
Amerada Pet. Co. No. 1 Carano, Los Banos, Merced	19-10-11	4,600	gr. sd. drlg.
Little Cuyama Oil, No. 1 Adelaida, San Luis Obispo	3-10-26	1,960	sd. sh. drlg.
Elba Oil Co., No. 1 Pajaro, Monterey Co.	6-13- 2	3,970	cleaning out
Amerada Pet. Co., No. 1 Deterding, Rio Vista, Solano	36- 4- 2	4,382	testing
Standard No. 2 Weyl, McDonald Island, San Joaquin	25- 2- 4	5,298	cmtd. 5,206
Standard Oil, No. 1 Morris, Delano, Tulare Co.	36-24-23	9,915	hd. sh. drlg.
Trico O. & G. Co., No. 1 Tulare Lake, Tulare Co.	28-24-23	2,467	gas well
Standard Oil, No. 1 Hooper, Woodland, Yolo Co.	32- 9- 1	5,181	redrlg. 3,670
Standard Oil, No. 1 Cook, Dunnigan, Yolo Co.	32-12- 1	5,009	dry; abd.
Empire O. & G. Co., No. 1 Woodland, Yolo Co.	8- 9- 3	231	sd. sh. drlg.
Wilshire Oil Co., No. 1 Half Moon Bay, San Mateo Co.	20- 6- 5	3,265	sd. sh. drlg.
Texas Co., No. 1 Crows Landing, Stanislaus Co.	30- 6- 8	1,495	dry; abd.

IMPORTANT WELLS AND SOUTHERN CALIFORNIA WILDCATS

Company, well, and location—	S.T.R.	Depth	Status
Richland Oil, No. 1-H El Segundo, Los Angeles Co.	7- 3-14	7,494	pump. 230 b.d.
Richland Oil, No. 2-SF El Segundo, Los Angeles Co.	7- 3-14	6,425	sd. sh. drlg.
Richfield Oil, No. 1 McCray, El Segundo, Los Angeles	12- 3-15	6,960	sd. sh. drlg.
Richfield Oil, No. 1-R El Segundo, Los Angeles Co.	18- 3-14	3,518	sd. sh. drlg.
Sunshine Oil, No. 1 G. W. El Segundo, Los Angeles	12- 3-15	2,671	sd. sh. drlg.
Sunshine Oil No. 1 C. W. El Segundo, Los Angeles	12- 3-15	5,892	sd. sh. drlg.
Sunshine Oil, No. 2 C.W. El Segundo, Los Angeles	12- 3-15	3,351	sd. sh. drlg.
Sunshine Oil, No. 1-W El Segundo, Los Angeles Co.	12- 3-15	5,083	sd. sh. drlg.
Apex Pet. Corp., No. 1 Elsie, El Segundo, Los Angeles	12- 3-15	6,881	sd. sh. drlg.
Tide Water A. O., No. 1 El Segundo, Los Angeles Co.	8- 3-14	7,650	hd. sh. drlg.
Ohio Oil, No. 8 Gough, El Segundo, Los Angeles Co.	7- 3-14	7,516	rig to pump
Ohio Oil, No. 9 Gough, El Segundo, Los Angeles Co.	7- 3-14	6,990	sd. sh. drlg.
Texas Co., No. 5 Security, El Segundo, Los Angeles	18- 3-14	7,405	sd. sh. drlg.
Ruchti Pet. Co., No. 1 El Segundo, Los Angeles Co.	12- 3-15	6,919	sd. sh. drlg.
Standard O., No. 4 Refinery, El Segundo, Los Angeles	13- 3-15	7,474	sd. sh. drlg.
Standard O., No. 5 Refinery, El Segundo, Los Angeles	13- 3-15	6,980	sd. sh. drlg.
Standard O., No. 6 Refinery, El Segundo, Los Angeles	13- 3-15	5,711	sd. sh. drlg.
Getty Oil Co., No. 1-A Segundo, Los Angeles Co.	7- 3-14	7,450	sd. sh. drlg.
Howard Oil Co., No. 1 El Segundo, Los Angeles Co.	12- 3-15	1,921	sd. sh. drlg.
Lakeside O., No. 10-1 Elsie, El Segundo, Los Angeles	18- 3-14	4,477	sd. sh. drlg.
Wilshire O., No. 9-1 Elsie, El Segundo, Los Angeles	12- 3-15	5,991	sd. sh. drlg.
Wilshire O., No. 9-2 Elsie, El Segundo, Los Angeles	12- 3-15	5,884	sd. sh. drlg.
Standard Oil, No. 84 L.A.I., Inglewood, Los Angeles	17- 2-14	1,455	cmtd. 1,455
C. C. M. Oil Co., No. 33-T Torrance, Los Angeles Co.	16- 4-14	3,710	cleaning out
Keystone Oil Co., No. 2 Torrance, Los Angeles Co.	16- 4-14	3,423	pump. 110 b.d
Kavanaugh, E. C., No. 1 Palos Verdes, Los Angeles	17- 4-14	5,526	P.B. 5,240
Tide Water A. O., No. 4 Cypress, Potrero, Los Angeles	34- 2-14	5,000	sd. sh. drlg.
Shell Oil, No. 92 Reyes, Dominguez, Los Angeles Co.	33- 3-13	7,860	O.S. drlg.
Union Oil, No. 51 Callender, Dominguez, Los Angeles	33- 3-13	4,054	sd. sh. drlg.
Union Oil, No. 56 Callender, Dominguez, Los Angeles	33- 3-13	9,100	sd. sh. drlg.
Union Oil, No. 57 Callender, Dominguez, Los Angeles	33- 3-13	6,996	sd. sh. drlg.
Union Oil, No. 10 Carson, Dominguez, Los Angeles	33- 3-13	6,282	sd. sh. drlg.
American Oilfields Ltd., No. 1 Rosecrans, Los Angeles	18- 3-13	4,400	will deepen
Barnsdall Oil, No. 18 O'Dea, Rosecrans, Los Angeles	18- 3-13	6,846	sd. sh. drlg.
Union Oil Co., No. 35 H.P., Rosecrans, Los Angeles	18- 3-13	7,400	sd. sh. drlg.
Union Oil Co., No. 17 Rosecrans, Los Angeles Co.	18- 3-13	7,557	sd. sh. drlg.
Macrate, A. N., No. 2 Rosecrans, Los Angeles Co.	17- 3-13	8,345	flow. 120 b.d.
Barnsdall Oil, No. 2-S-F., Newhall, Los Angeles Co.	26- 4-17	5,084	redrlg. 3,700
Burt, A. G., No. 1 Newhall, Los Angeles Co.	36- 4-17	2,450	hd. sd. drlg.
Royal Lands, No. 1 Ramona, Castaic, Los Angeles	8- 4-17	821	hd. sd. drlg.
General Pet., No. 23 Ford, Wilmington, Los Angeles	4- 5-13	2,955	sd. sh. drlg.
General Pet., No. 5 Isco, Wilmington, Los Angeles	4- 5-13	4,776	sd. sh. drlg.
General Pet., No. 1-P, Wilmington, Los Angeles Co.	33- 4-13	3,600	cleaning out
General Pet., No. 7-T, Wilmington, Los Angeles Co.	4- 5-13	2,200	sd. sh. drlg.
Allied Pet., No. 25, Wilmington, Los Angeles Co.	32- 4-13	3,705	sd. sh. drlg.
Bankline Oil, No. 8-D.H., Wilmington, Los Angeles	34- 4-13	3,194	sd. sh. drlg.
Bankline Oil, No. 23-D.H., Wilmington, Los Angeles	34- 4-13	3,330	flow 331 b.d.
Bankline Oil, No. 24-D.H., Wilmington, Los Angeles	34- 4-13	2,141	sd. sh. drlg.
Bankline Oil, No. 8-P.T., Wilmington, Los Angeles	34- 4-13	3,165	sd. sh. drlg.
Baker Oil Co., No. 1, Wilmington, Los Angeles Co.	35- 4-13	3,502	sd. sh. drlg.
Exeter Oil, No. 2 Banning, Wilmington, Los Angeles	32- 4-13	3,150	sd. sh. drlg.
Macson Oil, No. 55-C, Wilmington, Los Angeles Co.	32- 4-13	3,210	sd. sh. drlg.
Mid-Cal. Oil, No. 6-B.G., Wilmington, Los Angeles	33- 4-13	169	sd. sh. drlg.
Pacific Western, No. 1-R, Wilmington, Los Angeles	33- 4-13	5,284	sd. sh. drlg.
Pongratz, Gus, No. 1 Nix, Wilmington, Los Angeles	33- 4-13	3,671	flow 295 b.d.
Raleigh Oil, No. 1 Patten, Wilmington, Los Angeles	33- 4-13	1,994	sd. sh. drlg.
Royalty Serv., No. 2-P Wilmington, Los Angeles Co.	32- 4-13	3,590	sd. sh. drlg.
Royalty Serv., No. 22-7 Wilmington, Los Angeles Co.	33- 4-13	2,995	sd. sh. drlg.
Royalty Serv., No. 1-K Wilmington, Los Angeles Co.	33- 4-13	1,876	sd. sh. drlg.
Selegna Drlg. Co., No. 10 Wilmington, Los Angeles	33- 4-13	3,094	sd. sh. drlg.
Union Pacific R. R., No. 47 Wilmington, Los Angeles	3- 5-13	2,953	sd. sh. drlg.
Union Pacific R. R., No. 54 Wilmington, Los Angeles	4- 5-13	2,675	sd. sh. drlg.
Union Pacific R. R., No. 56 Wilmington, Los Angeles	4- 5-13	2,583	sd. sh. drlg.
Union Pacific R. R., No. 60 Wilmington, Los Angeles	4- 5-13	3,479	sd. sh. drlg.
Union Pacific R. R., No. 63 Wilmington, Los Angeles	34- 4-13	3,359	sd. sh. drlg.
Union Pacific R. R., No. 64 Wilmington, Los Angeles	34- 4-13	2,969	sd. sh. drlg.
Union Pacific R. R., No. 65 Wilmington, Los Angeles	34- 4-13	2,981	sd. sh. drlg.
Union Pacific R. R., No. 67 Wilmington, Los Angeles	34- 4-13	1,981	sd. sh. drlg.
Union Pacific R. R., No. 5-C Wilmington, Los Angeles	33- 4-13	3,318	flow. 401 b.d.
Wilton Oil Co., No. 2 Wilmington, Los Angeles Co.	32- 4-13	2,941	sd. sh. drlg.
Alford Oil, No. 1 C. Y. Wilmington, Los Angeles Co.	22- 4-13	2,534	sd. sh. drlg.
Julian, C. A., No. 1 Koch, Walnut, Los Angeles Co.	5- 2- 9	3,000	idle
British American Oil, No. 1 Pico, Los Angeles Co.	12- 2-12	3,875	sd. sh. drlg.
Davis, No. 1 Garvey Ranch, Montebello, Los Angeles	22- 2-11	536	sd. sh. drlg.
Texas Co., No. 18 Baldwin, Montebello, Los Angeles	5- 2-11	3,856	sd. sh. drlg.
St. Helens Pet. Co., No. 20-M Montebello, Los Angeles	6- 2-11	5,151	hd. sd. drlg.
Union Oil Co., No. 3 Flood Control, Los Angeles Co.	13- 4-13	2,964	sd. sh. drlg.
Texas Co., No. 4 Bauman, Long Beach, Los Angeles	19- 4-12	4,742	sd. sh. drlg.
Texas Co., No. 14 Harlow, Long Beach, Los Angeles	19- 4-12	4,650	sd. sh. drlg.
Rico Pet. Inc., No. 1 Long Beach, Los Angeles Co.	30- 4-12	4,080	fishing
Richfield Oil, No. 5 Davis, Long Beach, Los Angeles	19- 4-12	2,714	sd. sh. drlg.
Richfield Oil, No. 4 Keon, Long Beach, Los Angeles	29- 4-12	3,925	sd. sh. drlg.
Union Oil, No. 100 Santa Fe Springs, Los Angeles	6- 3-11	10,880	sd. sh. drlg.
General Pet., No. 37-A Santa Fe Springs, Los Angeles	6- 3-11	3,900	redrlg. 2,970
Texas Co., No. 7-W Santa Fe Springs, Los Angeles	6- 3-11	6,530	whipstocking
Continental Oil, No. 40 Bixby, Seal Beach, Orange Co.	2- 5-12	7,501	O.S. drlg.
Shell Oil Co., No. 4-1 Columbia, Olinda, Orange Co.	9- 3- 9	7,121	hd. sd. drlg.
Brea Canyon Oil Co., No. 36 Brea Canyon, Orange Co.	2- 3-10	4,552	fish D.P.
Standard Oil, No. 127 Murphy, West Coyote, Orange	18- 3-10	3,240	cmtd. 3,224
Standard Oil, No. 11 Coyote, East Coyote, Orange	22- 3-10	4,145	flow. 586 b.d.
Arrowhead Oil, No. 2 Bradford, Richfield, Orange	32- 3- 9	4,632	P.B. 4,555
Texas Co., No. 2 Isaacs, Richfield, Orange Co.	32- 3- 9	3,715	P.B. 3,460
Union Oil Co., No. 46 Chapman, Richfield, Orange Co.	29- 3- 9	3,835	O.S. drlg.
Oil Income Corp., No. 1 Anderson, Yorba, Orange Co.	22- 3- 9	1,685	O.S. drlg.
Hjorth & Mohr, No. 1 Yorba, Orange Co.	22- 3- 9	1,403	P.B. 1,345
Berco Oil Co. No. 1 Milhous, Yorba, Orange Co.	22- 3- 9	515	sd. sh. drlg.
Beverly Hills Pet. Co., No. 1 Fricke, Yorba, Orange	21- 3- 9	1,914	rig to pump
Mid-State Pet. Co., No. 1 Oliver, Yorba, Orange Co.	22- 3- 9	1,600	pump 175 b.d.
Bachmann Pet. Co., No. 1 Page, Yorba, Orange Co.	22- 3- 9	1,894	P.B. 1,630
Shell Oil Co., No. 1-H Anaheim, Orange Co.	9- 4-10	7,400	sd. sh. drlg.

KANSAS

Week Ending November 13 (Descriptions are East unless marked otherwise)

Barber County

Kansas Oil Corp. No. 1 Mease, NE SE SE sec. 27-30-11w. Set 12½-in. csg. 196 ft.

Olson Oil Co. and Skelly Oil Co. No. 1 Elsea, SW SE NW sec. 27-32-14w. Drlg. 5,198 ft.

Palmer Oil Corp. et al No. 1 Warwick, C NW sec. 29-31-10w. Rig.

Pryor & Lockhart No. 1 Pickens, CWL E½ SW sec. 34-30-13w. Prep. to spud.

Barton County

R. E. Day et al No. 1 Felts, SE SE NE sec. 14-16-12w. Drlg. 120 ft.

Martin & Foraker et al No. 1 Dick Est., NE SW SW sec. 31-19-11w. Rig.

Arch Merriam et al No. 1 Norris, NE NE NW sec. 33-17-11w. Rng. 8¼-in. to 2,650 ft.

Tom Palmer et al No. 1 Polzin, NW SE sec. 4-16-12w. Sil. 3,316 ft.; T.D. 3,326 ft.; pot. 949 B.O.; comp.

C. L. Price No. 1 Hammeke, NE NE SW sec. 12-18-12w. Sil. 3,415-27 ft.; 1,800 ft. O.I.H.; bails 4 bbls. wtr. every other day.

Shell Pet. Corp. No. 1 Ehrlich, SW cor. sec. 1-16-14w. T.D. 3,289 ft.; set 4½-in. on top of Sil.; swb. 39 B.O. in 2 hrs.

Stanolind O. & G. Co. No. 1 Hagen A, SE sec. 21-20-11w. Sil. 3,328 ft.; T.D. 3,333 ft.; R.U.S.T.

Chase County

Cal.-Ill.-Kans. Oil Co. No. 1 Evans, SW NW sec. 11-22-9e. H.F.W. 2,455-60 ft.; abd.

Chautauqua County

C. L. Brosius et al No. 1 Garrett, NW SW NW sec. 26-32-11. H.F.W. 2,076 ft., T.D.; P.B. 1,545 ft.; C.O.

W. G. Buffington No. 1 Fisher, CWL SW NW sec. 10-34-9e. S.D. 1,677 ft.

C. R. Craft No. 1 Lagree, SE NW NE sec. 8-32-12e. T.D. 2,080 ft.; P.B. 687 ft.

Harrison No. 1 Brown, NE SE NE sec. 19-34-10. S.D. 820 ft.

Ingot Oil Co. No. 1 McKee, SW NE SW sec. 21-32-12. T.D. 1,209 ft.; acd.

I. W. Siegel No. 1 Temple, SW cor. sec. 31-32-12. Rig.

Clark County

Olson Oil Co. et al No. 1 Watkins, SW NW sec. 23-32-21w. Drlg. 4,425 ft.

Cowley County

Arthur Brewer No. 1 Shepard, NE NE SE sec. 20-32-4e. Drlg. 1,600 ft.

Murta & Wilson et al No. 1 Stuber, SE NE NE sec. 27-30-5e. Drlg. 600 ft.

Pryor & Lockhart No. 1 Brown, NE SE SE sec. 34-33-2e. Sil. 3,853-64 ft. T.D.; P.B. 3,403 ft.; swedging pipe with 700 ft. O.I.H.

Smith & Price No. 1 Henderson, SW SW sec. 25-32-6. T.D. 2,165 ft.; S.D.

Ellis County

Bradley Oil Co. No. 1 Jenson, NW NW SE sec. 36-11-19w. Rng. 13-in. 150 ft.

Brunson Drlg. Co. et al No. 1 Weisner, SE SW SE sec. 31-13-17w. T.D. 3,651 ft.; P.B. 3,624 ft.; pump. 12½ bbls. fluid in 7 hrs.,26% wtr.

Colonial Oil Co. and Bernheimer No. 1 Albert, SW SW NE sec. 31-12-18w. Set 8-in. csg. 2,730 ft.; drlg. 3,209 ft.

Lario O. & R. Co. No. 1 Bell, NW NW NE sec. 8-12-18w. Sil. 3,862 ft.; T.D. 3,876 ft.; D.&A.

P. G. Reynolds et al No. 1 Karlin, NW cor. sec. 13-12-18w. U.R. 8-in. csg. to 3,635 ft.

C. E. W. Skiles et al No. 1 Jensen, SW SE NE sec. 26-12-18w. S.D. 2,910 ft.

Ford County

Olson Oil Co. et al No. 1 Fowler, C SW sec. 26-27-22w. Miss. L. 5,045 ft.; S.O. 5,060 ft.; drlg. 5,075 ft.

Grant County

R. K. Wilson No. 1-22 Helmly, C SE sec. 22-28-37w. T.D. 2,720 ft.; 7,642,000 ft. gas; comp.

Greenwood County

Eagle Oil Co. No. 1 Stine, NE NE SE sec. 13 28-10. U.R. 8-in. 730 ft.

Ward McGinnis et al No. 1 Henly Estate SW cor. sec. 25-25-9. Miss. 2,140 ft.; T.D. 2,234 ft.; P. 10 B.O. and 10 B.W.; comp.

John Nichols et al No. 1 Central Life, SE SW sec. 35-25-12. Spd. and S.D.

Whittaker & Johnson No. 1 Cannon, CEL SE NW sec. 8-26-13. Cmt. cave 950-1,000 ft.; drlg. cmt.

Harvey County

Allison et al No. 1 Hawks, SE SW NE sec. 16-24-1w. Drlg. 2,000 ft.

Jackson County

Lemmick Oil Co. No. 1 Marble Savings Bank, NE cor. sec. 26-9-14. Spd. and S.D.

Marion County

Tom Palmer, Inc. No. 1 Matz, SW SE SE sec. 8-19-1e. Drlg. 1,330 ft.

McPherson County

C. E. Ash Drlg. Co. No. 1 Broman, NE NE NW sec. 19-17-4w. Wilcox 3,724 ft.; H. F.W. 3,730 ft.; T.D.; S.D.

Boyle & Grossman No. 1 Diener, SE SE NE sec. 35-19-1w. Drlg. 2,375 ft.

Fred C. Frank et al No. 1 Doles, SE NW NE sec. 12-19-1w. Set 8-in. 2,775 ft.; S.D.

Meade County

Pacific Mid-West Co. No. 1 Rexford, NE SE SW sec. 8-30-29w. Drlg. 900 ft.

Mitchell County

Geo. Siedhoff et al No. 1 Greiss, SW SW SE sec. 16-8-10w. S.D. 4,022 ft.

Ness County

Marshall Drlg. Co. et al No. 1 Anderson, SW NW sec. 23-16-24w. Surface hole.

Trojan O. & G. Co. No. 1 Moses, C SW NW sec. 10-18-25w. Fsg. 300 ft.

Trojan O. & G. Co. No. 1 Page Milling Co., SE SE NW sec. 36-18-26w. Fsg. 3,265 ft.

Pawnee County

Phillips Pet. Co. No. 1 Johnson, C NE NW sec. 8-20-19w. Drlg. 580 ft.

Stanolind O. & G. Co. and Amerada Pet. Corp. No. 1 Jantz, SW cor. sec. 25-20-16w. Sil. 3,804-09 ft.; S.O.; set csg.

Phillips County

C. W. Davidson et al No. 1 Elliff, SE NE NE sec. 35-5-18w. S.D. 350 ft.

Pratt County

Colonial Oil Co. et al No. 1 Hays, SE SW sec. 4-26-12w. Drlg. 4,212 ft.

E. W. Hamilton and Robert Ray No. 1 Holland, SW NW SE sec. 6-26-12w. Drlg. 2,160 ft.

Skelly Oil Co. et al No. 1 Adams, SE NW NE sec. 2-28-11w. T.D. 4,300 ft.; fsg.

Reno County

Albert Austin No. 1 Schwiethale, SW SW NE sec. 17-23-10w. Drlg. 1,050 ft.

Lib Phillips et al No. 1 McPheeters, NE NE NW sec. 22-26-8w. Spd. and S.D.

Sam Schneider et al No. 1 Kroecker, NE cor. sec. 12-22-5w. Drlg. 3,405 ft.

Westgate-Greenland et al No. 1 Popp, SW SW NE sec. 7-25-4w. T.D. 3,530 ft. in Chat; rng. csg.

Rice County

Gillespie et al No. 1 Strong, NE NW sec. 9-18-8w. Spd. and S.D.

John Hanna et al No. 1 Marshall, NE NW NW sec. 30-18s-8w. S.D. 1,530 ft.

Skiles et al No. 1 Campbell, SE SE NE sec. 28-19-9w. T.D. 2,957 ft. (cor.); P. 10 B.O. and 60 B.W.; to deepen.

W. E. Witt et al No. 1 Fair, NW SE SE sec. 4-22-8w. T.D. 2,890 ft.; S.D. repairs.

Rooks County

C. R. Craft et al No. 1 Ziegler, NE SW sec. 8-10-16w. Drlg. 3,350 ft.

Graham et al No. 1 Fike, SW cor. sec. 9-9-17w. T.D. 3,328 ft.; pmpd. 50 B.O. and 35 B.W. in 8 hrs.; fsg.

Producers Oil Co. No. 1 Ham, SW SW NW sec. 25-7-19w. Spd. 60 ft.

Superior Oil Corp. et al No. 1 Casey, SE SE sec. 35-10-19w. Sil. 3,651-86 ft.; D. &A.

Texas Co. No. 1 McCarroll, C W½ W½ NW sec. 29-10-17w. Drlg. 3,667 ft.

Texo Trading Co. No. 1 Probst, SW SW NE sec. 18-6-19w. Surface hole.

Rush County

Duwe & Brouk No. 1 Lebsack, SE SE NE sec. 13-16-16w. Sil. 3,492-95 ft.; 1,500 ft.

sulfur water in hole in 2½ hrs.; T.D 3,512 ft.; S.D.O.
Wakefield & Brouk No. 1 Kerbs, NW NW SE sec. 11-17-16w. Drlg. 900 ft.

Russell County

Emrichs et al No. 1 Anderson, NE SE SW sec. 33-15-11w. Spd. and S.D.
Murfin and Vernon O. & G. Co. No. 1 Pearson, NE cor. sec. 31-15-15w. Drlg. 900 ft.
Parks No. 1 Opdycks, SW cor. sec. 20-14-13w. Sil. L 3,170 ft.; T.D. 3,189 ft.; P. 100 B.O. in 12 hrs.
C. L. Price No. 1 Sebesta, NE NE sec. 36-15-11w. Set 7-in. 2,950 ft.
Winkler & Koch No. 1 Jones, SE SE NW sec. 22-14-13w. Sil. 3,180 ft.; S.D.O.

Sedgwick County

Continental O. Co. et al No. 1 Oehlert, NW SE sec. 7-27-4w. Drlg. 3,301 ft.
Frank Hudson et al No. 1 Fulton, NE SE sec. 35-28-1e. Fsg. 1,550 ft.
McKnab No. 1 Garrett, SE SW SW sec 18-29-2e. S.D. 100 ft.
L. W. Murfin et al No. 1 Martin, SE NW sec. 32-28-1e. T.D. 3,491 ft.. P. 475 B. O. in 24 hrs.
National Ref. Co. No. 1 fee, SE NE SE sec. 26-27-2e. Pay sd. 3,087 ft.; T.D. 3,098 ft.; 2,000 ft. O.I.H.; to run csg.
M. Steinbuchel et al No. 1 Shaffer, SW SW NW sec. 18-25-1e. Drlg. 2,112 ft.
Union O. & R. Co. et al No. 1 Howell, SW cor. sec. 6-29-1e. Drlg. 2,395 ft.

Stafford County

W. P. Faulkner No. 1 Moses, NW SW sec. 9-22-13w. S.D. 2,170 ft.
Fred Rust et al No. 1 Drach, NE SW sec. 12-22-13w. Sil. 3,693 ft.; T.D. 3,705 ft.; P. 595 B.O. in 24 hrs.; to acd.
Stanolind O. & G. Co. No. 1 Shank, SE cor. sec. 17-24-13w. T.D. 4,145 ft.; D.&A.
Stanolind O. & G. Co. No. 1 Tiechman, SE cor. sec. 13-22-13w. Sil. 3,750 ft.; T.D. 3,756 ft.; R.U.S.T.
Torry & Feaster et al No. 1 McConnaughay, NE SE NW sec. 8-24-13w. Drlg. 2,052 ft.

Stevens County

United Prod. Co. No. 1 Beardsley, C N½ sec. 12-31-35w. Set 7-in. 2,525 ft.; W. O.C.

Sumner County

Cities Service Oil Co. No. 1 McCoy, SE SW sec. 11-35-2e. Drlg. 3,690 ft.
W. M. McKnab No. 1 Blair, SW cor. sec 7-30-1e. T.D. 3,869 ft.; swbs. 75 to 100 B.O.P.D.
Magnolia Pet. Co. No. 1 Baird, SW SE SE sec. 2-30-4w. T.D. 4,401 ft.; P.B. 4,395 ft.; P. 158 B.O. and 11 B.W. in 24 hrs.
R. J. Wixson No. 1 Newton, SE SE sec 21-30-2e. Drlg. 2,905 ft.

Trego County

Thurman Hill et al No. 1 Lawson, SW SW NW sec. 7-14-22w. Drlg. 2,640 ft.
R. E. McNeely et al No. 1 Hille, C SE NE sec. 22-15-24w. Sil. 4,665 ft.; T.D. 4,727 ft.; D.&A.
Phillips Pet. Co. No. 1 Trego, C SE SW sec. 14-12-23w. 6-in. csg. 4,070 ft.; T.D. 4,257 ft.; fsg.

Wallace County

Wilcox O. & G. Co. No. 1 Parker, SE SE NE sec. 9-11-40w. Miss. L. 5,108 ft.; T.D. 5,270 ft.; D.&A.

Woodson County

Chas. Reeser et al No. 1 Weide, NW SE sec. 18-25-14. Drlg. 750 ft.

OKLAHOMA

Week Ending November 13

NORTHERN OKLAHOMA

Beckham County

Mid-American Oil Co. No. 1-A Biscoe, SW cor. sec. 28-8-22w. Granite Wash; S.O. 2,213-20 ft.; S.D.

Caddo County

Indian Terr. Illum. Oil Co. No. 1 Dome-Bo, C NE SE sec. 29-6-10w. T.D. 5,255 ft.; 9-in. csg. parted; changing drlg. equip.

Cleveland County

Harper-Turner No. 1 Pollock, C W½ NW NW sec. 13-9-2w. Drlg. 6,785 ft.

Creek County

M. W. Mosier et al No. 1 Holcomb, SE SW NW sec. 19-18-8. T.D. 3,018 ft.; P.B. 3,015 ft.; bad csg.; S.D.

Garfield County

H. R. Hollenback et al No. 1 Clark, NW cor. sec. 34-21-6w. Drlg. 4,972 ft.

Garvin County

Carter Oil Co. No. 1 Potts, C E½ SE NW sec. 36-1n-3w. Drlg. 3,880 ft.
B. C. D. Edwards No. 1 Clark, NE cor. sec. 16-3n-3e. Drlg. 2,575 ft.

Grady County

Doyle Pet. Co. No. 1 Huffine, NW NW SE sec. 30-5-8w. Drk.
Gulf Oil Corp. No. 1 Thomas, SW NW NW sec. 14-4-5w. Drlg. 8,945 ft.

Grant County

Magnolia Pet. Co. No. 1 Reynolds, NE NE SE sec. 19-25-5w. Drlg. 1,175 ft.

Greer County

J. I. Medlin et al No. 1 Broudie, NW cor. sec. 5-6n-20w. T.D. 90 ft.; S.D.

Hughes County

Burke-Greis Oil Co. No. 1 Rhea, SW SW SE sec. 14-10-9. Drlg. 3,490 ft.; H.F.W.
Phillips Pet. Co. No. 1 Becker, NE NW SW sec. 8-5-10. Set 9-in. at 4,450 ft.; F. 10 B.O. in 10 hrs.; cg. ahead.
Pure Oil Co. No. 1 Rogers, SE SE NE sec. 18-8-12. Cg. below 4,450 ft.

Kay County

E. W. Jones et al No. 1 Dorse, SE SW NW sec. 25-26-1w. T.D. 1,395 ft.; S.D. repairs.
E. J. Shaffer et al No. 1 McKee, NE NW sec. 20-28-1w. Set 7-in. 2,412 ft.; T.D. 2,415 ft.; W.O.C.

Kiowa County

Hughes & Reese No. 1 Fultz, SE cor. sec. 10-6-18w. S.O. 968-74 ft.; U.R. 8¼-in.; S.D.

Lincoln County

C. L. Carlock No. 1 Young, C N half NW NW sec. 23-15-5. Drlg. 4,225 ft.
Riley & Talbot et al No. 1 Weidler, NW SW NW sec. 20-17-2e. 2nd. Wilcox 5,010-26 ft.; D.&A.

Logan County

Texas Co. No. 1 Roper, C W½ SW SE sec. 22-15-1e. Cd. 4,730-42 ft.; show of dead oil; drlg. 5,030 ft.

Okfuskee County

Riverland Oil Co. No. 1 Board, NE NW SE sec. 10-13-10. Set 6-in. 2,788 ft.; T.D. 2,840 ft.

Okmulgee County

Phillips Pet. Co. No. 1 Wood, NW SW SW sec. 31-11-13. Rig.

Pittsburg County

Okla. Dist. Oil Co. No. 1 Beeler, NE NE SW sec. 7-7-14. Drlg. 5,629 ft.
Phillips Pet. Co. No. 1 Gilcrease, NW NW SE sec. 16-7-12. Wilcox 5,364 ft.; fsg. 5,392 ft.

Pontotoc County

Kerlyn Oil Co. No. 1 Pratt, SW SE NE sec. 6-4-4e. Wilcox 2,290-2,355 ft.; T.D.; rng. Schlumberger.
Papoose Oil Co. et al No. 1 Jones, NW SE NW sec. 2-4-5. Viola 2,595 ft.; T.D. 2,840 ft.; run Schlumberger; S.D.O.
Union Dev. Co. No. 1 Abbott, SW NW NE sec. 34-3-6. T.D. 3,320 ft.; drill pipe stuck. S.D.

Pottawatomie County

Hightower No. 1 Baker, SE SE NW sec. 27-6-3e. Tools moved out; S.D.

Seminole County

W. B. Osborn et al No. 1 Harris, NW cor. sec. 11-6-5. Spd.
Stanolind O. & G. Co. and Amerada Pet. Corp. No. 1 Salina, SE NE NW sec. 4-5-6. T.D. 3,317 ft.; P.B. 3,185 ft.; acd.; swb. 64 B.O. in 9 hrs.

Texas County

Hagey et al No. 1 Becker, C NE sec. 4-1n-13ecm. Spray S.W. 2,910 ft.; T.D. 3,010 ft.; to P.B.
Hagey et al No. 1 Peck, C NE sec. 6-1n-13ecm. Set 7-in. 2,766 ft.; W.O.C.

Washita County

John Koberg No. 1 Harms, NW NW NE sec. 6-10-16w. T.D. 4,260 ft.; S.D.

SOUTHERN OKLAHOMA

Atoka County

C. M. Sheldon and Gardner Pet. Co. No. 1 Lee, NE NW SW sec. 2-4s-10e. Drlg. 1,380 ft. in L.

Carter County

E. M. Boring No. 1 Sullivan, SE SE SW sec. 6-5s-1e. Drlg. 1,820 ft.

Coal County

Carter Oil Co. No. 1 Claytor, C W½ NE SW sec. 27-2n-9e. T.D. 6,355 ft.; 3,000 ft. O.I.H. in 15 hrs.; tstg.
Phillips Pet. Co. No. 1 Beck, SE SW SW sec. 6-1n-9e. Drlg. 5,115 ft.

Cotton County

J. W. Amvx No. 1 Ash, SE cor. sec. 7-4s-10w. T.D. 1,250 ft.; set 8⅝-in. at 1,246 ft.; W.O.C.
Bowers & Wise No. 1 Pendergraft, NW SE SW sec. 4-4s-12w. Spd. 16 ft.; S.D.

Jefferson County

Massad & Swansberger No. 1 Barrett, NE SE SE sec. 14-6s-6w. T.D. 1,890 ft.; S.D.

Johnston County

Patton et al No. 1 McCrummins, C SW SW NE sec. 16-1s-6e. S.D. 1,380 ft.
W. T. Sheldon No. 1 Chapman, C NW NW sec. 26-4s-6e. Drlg. 2,355 ft.

Marshall County

F. W. Merrick, Inc., No. 1 Robinson, NE cor. sec. 33-7s-4e. T.D. 2,557 ft.; abd.
Paul Robb et al No. 1 Vittitoe, C NE SE sec. 11-5s-4e. O.W.D.D.; C.O. to 720 ft.; S.D.

Murray County

Meyer & Greenup No. 1 Arbuckle, NW NW NE sec. 18-2s-3e. Spd. and S.D.
O. O. Owens No. 1 Fryer, NE SE NE sec. 34-1s-3e. T.D. 2,574 ft.; 1,400 ft. W.I.H. S.D.
Sinclair Prairie Oil Co. No. 1 Lancaster Trust, C SW NE sec. 10-1-2e. T.D. 4,404 ft.; freeing stuck pipe.

Pushmataha County

Erle Halliburton et al No. 1 Bagwell, SW NE NE sec. 30-3s-15e. T.D. 6,010 ft. in Stanley formation; S.D.O.

Stephens County

Jack Cohen No. 1 Pierce, NE NE NW sec. 24-2s-6w. T.D. 1,877 ft.; fsg.
Coline Oil Co. No. 1 Johnson, C SW SE SE NE sec. 1-2n-8w. T.D. 10,000 ft.; P.B. 9,064 ft.; acd.; swbg.
Chas. Newsom No. 1 Pfile, SW cor. sec. 1-2s-7w. T.D. 3,551 ft.; S.D.O.
Ed Parsons and Olson Drlg. Co. No. 1 Blake, C SW NW sec. 22-2n-8w. Drlg. 5,508 ft.

Tillman County

Cavens et al No. 1 Southerland, SW SW NW sec. 35-4s-16w. T.D. 44 ft.; S.D.
Tom Walker No. 1 Bowman, SW SW NW sec. 10-4s-17w. S.D. 200 ft.

LOUISIANA

NORTH LOUISIANA PROVEN

Caddo—Rodessa

F. W. Burford No. 1 Pitts, NW sec. 1-23-16. Comp.; gauge 13,400,000 ft. gas; T.D. 6,010 ft.
F. W. Burford No. 1 R. A. Terry, NW E½ sec. 2-23-16. Drlg. 5,787 ft.
F. W. Burford No. 4 Terry, SE NE sec. 2-23-16. Drlg. 5,330 ft.
F. W. Burford No. 1 U. S. Govt., NE SE SW sec. 6-23-16. Cg. 6,045 ft.
Magnolia Pet. Co. No. 4 Mary S. Atkins, SW SE sec. 7-23-15. 7-in. 6,028 ft.; tstd. S.W.; T.D. 6,057 ft.
Magnolia Pet. Co. No. 2 G. W. Hardy, NW SW sec. 1-23-16. Drlg. 4,900 ft.
Standard Oil of La. No. 1 Mrs. Alice N. Gibson, NW NE SW sec. 10-23-16. Cg. 5,843 ft.
Union Prod. Co. No. 6 Starke, SW cor. sec. 8-23-16. D.S. stuck 5,860 ft.
G. H. Vaughn No. 1 J. G. Yates, NW cor. sec. 2-23-16. Comp. 1,100 bbls. dly.; T.D. 5,997 ft.

N. LOUISIANA WILDCATS

Bienville Parish

Gulf Ref. Co. No. 1 Goodpine, sec. 25-14-8. Drlg. 5,546 ft.
H. L. Hunt and Seaboard No. 1 Federal Ld. Bk., SW sec. 10-16-16. 7-in. 6,857 ft.; T.D. 6,928 ft.

Bossier Parish

Premier Inv. Co. No. 1 McDade, SE SW NE sec. 28-19-11. Drlg. 700 ft.

Caddo Parish

W. D. Chew No. 3 Spell, NE SW SE sec. 29-21-15. W.O.S.R. 1,575 ft.
Mrs. O. P. Clement No. 1-B Caddo Lvy. Bd., NE sec. 5-20-16. Drlg. 1,720 ft.
Driscoll Jt. No. 1 Muslow, SE NW NE sec. 4-20-15. Drlg. 1,920 ft.
W. Dromgoole No. 1 School Bd., SE NW sec. 16-19-14. Drlg. 1,650 ft.
A. R. Hancock No. 1 Helpman, NE SW sec. 6-21-16. Cg. 985 ft.
W. H. Harrison No. 2 Shoreline Crystal, SE NW NE sec. 23-21-16. Drlg. 500 ft.
Magnolia Pet. Co. No. 27 Robertshaw, sec. 29-21-15. Comp. 100 bbls. dly.; T.D. 1,640 ft.
La. Oil Prod. Co. No. 11-B Muslow, sec. 4-20-15. W.O.S.R. 2,220 ft.
O. O. Olsen No. 1 R. T. Sharp, W½ NW sec. 15-18-16. Drlg. 4,812 ft.
Frank Perkins No. 2-A Stiles, SW NW SW sec. 33-21-16. W.O.S.R. 1,870 ft.
Prairie River Synd. No. 1 Hutchinson, SW NW sec. 15-15-12. S.D. 9,141 ft.
Sam M. Richardson No. 1 Sentell, SW E½ sec. 9-19-14. T.D. 2,460 ft.; W.O.S.R.
J. J. Shulman No. 1 Hobbs, NW sec. 28-21-15. Drlg. 1,125 ft.
Simplex Oil Co. No. 12 Glassell, sec. 10-20-15. 6-in. 2,183 ft.; T.D. 2,195 ft.
Standard Oil Co. No. 4 McCoy, sec. 10-23-16. R.U.
Stanolind O. & G. Co. No. 130 Dillon, NW SW sec. 13-20-15. Comp.; pmpg. 75 bbls. dly.; T.D. 1,700 ft.
R. G. Trippett No. 1 Sharpe, sec. 4-23-16. 13⅜-in. 197 ft.

Claiborne Parish

Atlantic Refg. Co. No. 2-B Tatum, E½ NW SW sec. 32-21-4. Loc.
Atlantic Ref. Co. No. 2-C Patton, E½ SW SE sec. 29-21-4. Drlg. 4,870 ft.
Crescent Drlg. Co. No. 1 Fowler, E½ SW NW sec. 33-21-4. Drlg. 4,338 ft.
E. W. Gill No. 1 English, S½ NE SW sec 29-21-4. Comp. 160 bbls. 5½ hrs.; T.D. 5,150 ft.
Harry Hanbury No. 1-E R. Vaughn, S½ NE SE sec. 25-21-5. 10¾-in. 822 ft.; T.D. 1,385 ft.
W. L. McClanahan No. 1 J. T. Lewis W½ SW SE sec. 25-20-7. 10¾-in. 2,161 ft.
A. O. Olsen No. 1 English, E½ SE SE sec. 29-21-4. Drlg. 3,175 ft.
A. O. Olsen No. 5-A Patton, NE SW sec. 30-21-4. Drlg. 4,145 ft.
C. R. Schuster No. 1 S. Lloyd, SW SW sec. 2-20-5. R.U.
Sloan & Zook No. 2-C S. L. Patton, sec. 1-20-5w. Drlg. 5,265 ft.
Sloan & Zook Co. No. 4 W. H. and M. Patton, sec. 1-20-5. Comp. 10 P.B.H.; T.D. 5,292 ft.
Tippett Drlg. Co. No. 2 C. S. L. Patton, sec. 1-20-5. Drlg. 5,265 ft.
Union Prod. Co. No. 2 Brownfield, sec. 5-19-5; O.W.D.D., Sugar Creek field. Drlg. 7,268 ft.
G. H. Vaughn No. 2 Eppinger, N½ SW SW sec. 29-21-4. Drlg. 3,730 ft.

LaSalle Parish

T. & J. Inc. No. 2 Tullos, SE NE sec. 26-10-1e. R.U.

Concordia Parish

Coastal Mineral & Dev. Co. No. 1 Winston, sec. 23-7-9e. 7-in. 2,028 ft.; T.D. 2,303 ft.

De Soto Parish

Clear Lake Oil Co. No. 1 J. A. Wooluma, NW sec. 29-12-12. Wtg. on csg.; T.D. 2,690 ft.
Kingston Oil Co. No. 1 Scott, SE NE sec. 32-14-13. W.O.S.R.; T.D. 2,765 ft.

Lincoln Parish

Gulf Ref. Co. No. 1 M. Patton, C sec. 6-20-4. Sdtrkg.; T.D. 4,160 ft.
Ludel Oil Corp. No. 1 Gill, NE NE NW sec. 36-20-2w. S.D. 6,000 ft.
Magnolia Pet. Co. No. 1-B F. Corbin, N½ NW NW sec. 5-20-4. Drlg. 4,320 ft.
E. H. Moore, Inc. No. 1 Arcadia Comm. Bk., C NW sec. 22-18-5. D.S. stuck; T.D. 6,085 ft.
Red Iron Drlg. Co. No. 2 T. F. Patton, NW SW NE sec. 6-20-4. Drlg. 3,845 ft.

Red River Parish

Arkansas Fuel Co. No. 1 Frankland Realty Co., NW sec. 20-11-9. 16-in. 180 ft.
J. F. Lent et al No. 1 Chicago Coal & Ld. Co., SE sec. 17-13-11. S.D. 1,604 ft.

Sabine Parish

Fox & Phillips No. 1 Cook Ld. Co., SW SE NW sec. 1-9n-12w. S.D. 2,035 ft.
Gold Oil Co. No. 1 Darby, N½ SE sec. 21-7-11. Tstg.; T.D. 2,586 ft.
Hunter Co. No. 1 Long Bell Lbr. Co., sec. 23-7-13. Drlg. 50 ft.
Major Oil Co. No. 1 Graham, SE NE NE sec. 19-9-13. 7-in. 1,682 ft.
Remine et al No. 1 4-L Co., SW SW sec 7-5-12. Drlg. 3,842 ft.

Tensas Parish

H. M. Jones No. 2 Chicago Mill & Ld. Co., NE SW sec. 31-12-10e. R.U.

Union Parish

Joe Modisett No. 1 Frost Lbr., sec. 14-21-1e. 9⅝-in. 4,358 ft.

Webster Parish

V. L. Foster No 2 J. M. Mixon, SE sec. 21-21-10. Drlg. 7,246 ft.
Magnolia Pet. Co. No. 4 Aarnes-Cox, NW sec. 22-21-10. 7-in. 8,388 ft.; T.D. 8,423 ft.
Magnolia Pet. Co. No. 1 Crichton Hrs., NE NW sec. 33-21-10. Drlg. 5,490 ft.
Magnolia Pet. Co. No. 7 Marshall, SW SE sec. 21-21-10. Drlg. 3,680 ft.

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McGREGOR WORKING BARREL COMPANY
Bradford, Pa., U.S.A.

Ohio Oil Co. No. 2 Bodcaw Acct. 4, SW SE NW sec. 24-21-10. Drlg. 3,760 ft.
Ohio Oil Co. No. 48 Bodcaw Acct. 2, SE sec. 15-21-10. Drlg. 3,200 ft.
Ohio No. 1 S. P. D. Govie and W. Cox, SW SW SE sec. 23-21-10. Comp. 170 bbls. dist. and 3,000,000 ft. gas; T.D. 8,119 ft.
Ohio Oil Co. No. 2 Warren Cox, SE sec. 23-21-10. Drlg. 4,188 ft.
A. G. Oliphant et al No. 1 Ranks, NE NE sec. 34-21-10. Comp. 288 bbls. dist. and 3,000,000 ft. gas; T.D. 8,187 ft.
Standard Oil Co. of La. No. 7 Mrs. M. F. Davis, NE NE NW sec. 23-21-10. Drlg. 7,972 ft.
Standard Oil Co. of La. No. 2-B Mrs. M. E. Gray, NE NE NW sec. 26-21-10. Drlg. 7,960 ft.
United Gas No. 6 Tillman, NE sec. 28-21-10. Drlg. 6,500 ft.
Woodley Pet. Co. No. 5-B M. E. Gray, sec. 27-21-10. Drlg. 5,260 ft.

SOUTH LOUISIANA FIELDS

Anse La Butte—St. Martin Parish

Anse La Butte Oil Corp. No. 1 Billeand, sec. 117-9s-5e. T.D. 832 ft.; 7-in. csg. 790 ft.; swb. S.W.; cmt. off bttm.; W. O.C.
Crusader Pet., Inc., No. 1 Central Oil Co., sec. 86-9s-5e. 10¾-in. csg. 465 ft.; drlg. sh. 1,612 ft.

Bay St. Elaine—Terrebonne Parish

F. J. LeBlanc No. 2 Wurzlow, sec. 17-22s-18e. S.D. 910 ft.
Texas Co. No. 15 State, sec. 20-22s-18e. Drlg. sdy. sh. 4,724 ft.

Bayou Blue—Iberville Parish

Humble O. & R. Co. No. 5-A Wilberts, sec. 75-9s-10w. Drlg. sh. 429 ft.

Bayou Cocotris—Terrebonne Parish

Shell Pet. Corp. No. 3-B Realty, sec. 18-17s-15e. 16-in. csg. 117 ft.; drlg. sd. 9,182 ft.; rec. 23 bbls. of oil on D.S.T. 9,060-67 ft.

Bayou De Allemands—St. Charles Parish

Amerada Pet. Corp. No. 1 St. Charles Ld. Co., sec. 38-15s-20e. 10¾-in. csg. 2,698 ft.; drlg. sh. 7,515 ft.

Big Lake—Cameron Parish

Union Sulphur Co. No. 1 P. J. Hebert, sec. 18-12s-8w. 6⅝-in. csg. 8,441 ft.; T. D. 9,289 ft.; D.S. stuck; P.B.; sdtrk. drlg. sh. 8,510 ft.
Union Sulphur Co. No. 2 J. O. Hebert, sec. 18-12s-8w. Core sd. show oil 8,442-63 ft.; coring sdy. sh. 8,612 ft.

Black Bayou—Calcasieu Parish

Shell Pet. Corp. No. 36 Watkins. T.D. 5,033 ft.; run 7-in. csg.

Bosco—Acadia Parish

Superior Oil Co.-Pure Oil Co. No. 5 Larcade, sec. 35-8s-3e. T.D. 10,216 ft.; fsg.

Cameron Meadows—Cameron

Burton-Sutton Oil Co. No. 19 Sch. Ld., sec. 16-14s-13w. Drlg. sh. 5,493 ft.; (no report).
Magnolia Pet. Co. No. 21 Cameron Meadows, sec. 21-14s-13w. 13⅜-in. csg. 1,173 ft.; drlg. sh. 2,216 ft.

Charenton—St. Mary Parish

Pan American Prod. Co. No. 1 Dolph, sec. 36-13s-9e. T.D. 7,185 ft.; 7-in. csg. 6,904 ft.; perf. csg. 6,838-46 ft.. swbg.; no results.
Pan American Prod. Co. No. 2 South Coast Corp., sec. 31-13s-9w. T.D. 7,228 ft.; 7-in. csg. 6,556 ft.; perf. 6,476-94 ft.; tested S.W.; abd.

Choctaw—Iberville Parish

Standard Oil Co. No. 10 Grove, sec. 52-9s-11e. T.D. 5,303 ft. in salt; D.S. stck. P.B. 4,650 ft.; T.D. 5,075 ft.; sdtrkd. while rmg.; top salt 5,188 ft.; S.D. 5,814 ft.; salt; abd.
Louisiana Crusader Oil Co. No. 1 E. B. Schwing, sec. 29-8s-11e. Drlg. sh. 1,829 ft.

Darrow—Ascension Parish

Humble O. & R. Co. No. 16 Community, sec. 29-10s-2e. T.D. 5,838 ft.; abd.
Kiva Oil Co. No. 1 Duplessis, sec. 69-10s-2w. R.U.
Humble No. 12 Gumbel, sec. 33-10s-2e. 16-in. csg. 225 ft.

Dog Lake—Terrebonne Parish

Texas Co. No. 18 State, sec. 5-22s-16e. T.D. 7,606 ft.; P.B. 1,564 ft.; drlg. sdy. sh. 7,705 ft.

Edgerly—Calcasieu Parish

Crusader Pet., Inc., No. 1 Miller Bros., sec. 27-9s-11w. 7-in. csg. 6,078 ft.; T.D. 6,523 ft.; 5-in. csg. 6,215 ft.; abd.

Four Isle—Terrebonne Parish

Texas Co. No. 9 L.L.&E., sec. 24-21s-16e T.D. 8,553 ft.; P.B. 3,881 ft.; sdtrk.; drlg. sdy. sh. 5,069 ft.

Garden Island—Plaquemines Parish

Texas Co. No. 24 State, sec. 37-23s-33e. T.D. 5,596 ft.; salt; P.B. 3,464 ft.; drlg. sdy. sh. 5,378 ft.

Gillis—Calcasieu Parish

Union Sulphur Co. No. 7 Kaufman, sec. 13-9s-8w. T.D. 7,079 ft.; 5-in. csg. 7,052 ft.; swbd. S.W.; P. B. 6,898 ft.; swbd. S.W.; fsg. for screen; P.B. 7,057 ft.; trying to sdtrk.; (no report).
Union Sulphur Co. No. 2 Mary Melvor, sec. 14-9s-8w. Drlg. sdy. sh. 6,222 ft.; (no report).

Hackberry—Cameron Parish

W. T. Burton No. 3 Lewis, sec. 22-12s-10w. R.U.
W. T. Burton No. 1 Porter Ellender, sec. 27-12s-10w. T.D. 5,578 ft.; 7-in. csg. 4,950 ft.; P.B. 4,910 ft.; perf. csg. 4,891-4,907 ft.. swbg.
M. P. O'Meara No. 1 Rigmaden heirs, sec. 22-12s-10w. Drk.
Stanolind O. & G. Co. No. 6 Duhon, sec. 22-12s-10. Drlg. sh. 4,593 ft.; (no report).
Stanolind O. & G. Co. No. 7 Duhon, sec. sh. 3,260 ft.; (no report).
Stanolind O. & G. Co. No. 8 Carter & Sweeney, sec. 22-12s-10w. R.U.
Stanolind O. & G. Co. No. 10 Carter & Sweeney, sec. 22-12s-10w. Drk.
Stanolind O. & G. Co. No. 26 Gulf Ld., sec. 22-12s-10w. 10¾-in. csg. 1,644 ft.; T.D. 4,513 ft.; reaming.
Stanolind O. & G. Co. No. 27 Gulf Ld., sec. 22-12s-10w. R.U.
Texas Co. No. 23-B State, sec. 12-12s-9w. T.D. 5,448 ft.; P.B. 2,409 ft.; T.D. 7,274 ft.; P.B. to sdtrk.; coring oil sd, 7,466 ft.; (no report).

Lockport-Cameron Parish

Magnolia Pet. Co. No. 35 Miller, sec. 9-10s-9w. Drlg. sh. 6,712 ft.

Jeanerette—St. Mary Parish

Herton Oil Co. No. 1 Teche Sugar Co., sec. 58-13s-8e. Spudded.

Jennings—Acadia Parish

Frank W. Bennett et al No. 1 Brethern and Christ Church, sec. 41-7s-2w. T.D. 7,107 ft.; D.S. stuck; shot: P.B. 5,586 ft.; sdtrkd. to 5,740 ft.; drlg. sh. 6,312 ft.
W. T. Burton No. 4 Roboria, sec. 41-9s-3w. Core sdy. sh. 6,712 ft.
Crusader Pet., Inc., No. 1 E. H. Grace, sec. 45-9s-2w. T.D. 3,641 ft.; 7-in. csg. 3,602 ft.; tstg.
Glassell & Glassell No. 2 McFarland, sec. 41-9s-2w. T.D. 6,975 ft.; 7-in. csg. 6,770 ft.
Glassell & Glassell No. 4 Trushell, sec. 42-9s-3w. T.D. 3,476 ft.; S.D.
Gulf Ref. Co. No. 39 Arnaudit, sec. 47-9s-2w. Drlg. 1,530 ft.
Jolly Pet. Co. No. 2 McFarlain, sec. 41-9s-2w. Bldg. drk.
M. P. O'Meara No. 1 Moresi, sec. 41-9s-2w. R.U.
Jolly Pet. Co. No. 5 Jennings-Haywood, sec. 46-9s-2w. Drk.
Reiter Foster Oil Co. No. 2 Crusel, sec. 42-9s-2w. Drlg. sdy. sh. 3,908 ft.
Superior Oil Co. No. 1 Julis Clement, sec. 46-9s-2w. R.U.
Shell Pet. Corp. No. 3 Community, sec. 40-9s-2w. Drlg. sd. and sh. 5,505 ft.
Stanolind O. & G. Co. No. 19 Houssiere-Latrelle, sec. 47-9s-2w. Drlg. sdy. sh. 4,812 ft.
Superior Oil Co. No. 8 Leckelt, sec. 42-9s-2w. Drlg. sh. 6,139 ft.
Superior Oil Co. No. 7 Leckelt, sec. 42-9s-2w. T.D. 4,743 ft.; cmtd.; fsg.; drlg. out cmt.
Superior Oil Co. No. 4 Jennings-Haywood, sec. 41-9s-2w. T.D. 6,500 ft.; 7-in. csg. 6,314 ft.; I.P. 388 B.P.D., ⅝-in. ck.
Superior Oil Co. No. 3 Moresi, sec. 41-9s-2w. T.D. 6,748 ft.; stuck D.S.; sdtrkg. 5,038 ft.; drlg. sh. 6,610 ft.

Lafitte—Jefferson Parish

Texas Co. No. 7 L.L.E., sec. 20-17s-24w. Drlg. sdy. sh. 10,018 ft.
Texas Co. No. 8 Rigolet, sec. 29-17s-24e. 13⅜-in. csg. 1,923 ft.; drlg. sdy. sh. and L. 6,586 ft.
Texas Co. No. 1 State-Bayou Norma, sec. 28-17s-24e. T.D. 12,115 ft.; D.S. stuck; P.B. 9,637 ft.; perf. csg. 9,530-9,630 ft.; I.P. 1,817 B.P.D.; ⅝-in. ck.

Lake Barre—Terrebonne Parish

Texas Co. No. 141 State, sec. 40-21s-19e. S.D. 3,744 ft.; sdtrkd.; T.D. 3,641 ft.; P.B. and sdtrkd.; drlg. sdy. sh. 3,578 ft.; (no report).

Lake Hermitage—Plaquemines Parish

Gulf Ref. Co. No. 7 Lafourche, sec. 12-18s-25e. 7-in. csg. 8,074 ft.; drlg. sh. 8,789 ft.

Lake Pelto—Terrebonne Parish

Texas Co. No. 13 State, sec. 8-23s-18e. T.D. 6,605 ft.; D.S. stuck.

Lake Washington—Plaquemines Parish

Humble O. & R. Co. No. 25 Cockrell, sec. 35-20-26e. T.D. 6,357 ft.; recvd. 14 stands P.L.O.; 9⅝-in. csg. 5,263 ft.; 7-in. csg. 6,354 ft.

Lockport—Calcasieu Parish

Magnolia Pet. Co. No. 35 Miller, sec. 9-10s-9w. Drlg. sh. 6,553 ft.; (no report).

Lake Long—Lafourche Parish

Fohs Oil Co. No. 2 State, sec. 65-17s-19e. R.U.
Fohs Oil Co. No. 3 State, sec. 65-17s-19e. 10¾-in. csg. 2,743 ft.; T.D. 9,539 ft.; sd. 9,517-33 ft. showed S.W.; cutting and pulling screen.

Leesville—Plaquemines Parish

Texas Co. No. 63 Leesville, sec. 27-12s-22e. Bldg. drk.

Lirette—Terrebonne Parish

Humble O. & R. Co. No. 1 Frank Wurzlow sec. 6-19s-19e. Drlg. sh. 2,937 ft.

New Iberia—Iberia Parish

Wm. Hellis No. 3 Schwing, sec. 57-12s-7e. T.D. 5,019 ft.; P.B. and sdtrkd.; salt 5,509 ft.; P.B. 2,650 ft.; T.D. 3,949 ft.; 7-in. csg. 3,920 ft.; L. 4,524 ft.. T.D. 4,552 ft.; P.B.; sdtrk.; drlg. sh. 3,312 ft.
Texas Co. No. 3 Bryant, sec. 25-12s-7e. R.U.
Wm. Hellis No. 9 Bernard, sec. 54-12s-7e. T.D. salt 5,171 ft.; P.B. and sdtrkd.; sd.&sh. 4,538 ft.; T.D. 4,661 ft.; salt; P.B.; sdtrk.; drlg. sh. 4,213 ft.
Wm. Hellis No. 10 Bernard, sec. 54-12s-7e. R.U.
Wm. Hellis No. 11 Bernard, sec. 54-12s-7e. T.D. 3,974 ft.; salt; sdtrk.; drlg. sh. 2,112 ft.
Wm. Hellis No. 6 Bullock-Burke, sec. 25-12s-7e. T.D. 4,817 ft.; P.B. and sdtrkd.; T.D. 4,769 ft.; P.B. 2,700 ft.; salt 4,463 ft.; P.B. 3,955 ft.; 7-in. csg. 3,890 ft.; I.P. 550 bbls. P.L.O. per day., ¼-in. ck.
Texas Co. No. 1 Burke, sec. 56-12s-8e. Drlg. wtr. sd. 1,515 ft.
Texas Co. No. 4 Duke, sec. 26-2s-7e. Drlg sh. 4,607 ft.; I.P. 434 B.P.D., ¼-in. ck.

North Crowley—Acadia Parish

Humble O. & R. Co. No. 1 H. J. Habetz, sec. 45-8s-1e. Dlg. pits.
Humble O. & R. Co. No. 1 Habetz, sec. 3-8s-1e. Drlg. sh. 6,537 ft.
Humble O. & R. Co. No. 1 L. Laumbrecht. sec. 4-9s-1e. Drlg. sh. 8,025 ft.

Roanoke—Jeff Davis Parish

Humble O. & R. Co. No. 9-B Devilbiss, sec. 11-9s-4w. Drlg. sh. 7,712 ft.
Superior Oil Co. No. 1 Ferguson, sec. 13-9s-4w. R.U.

Sorrento—Ascension Parish

Sorrento Oil Co. No. 1 L. L. Barnard et al, sec. 16-10s-4e. R.U.

South Elton—Jeff Davis Parish

Stanolind O. & G. Co.-Amerada Pet. Corp. No. 3-B Calcasieu Natl. Bank, sec. 27-7s-3w. R.U.

South Jennings—Jeff Davis Parish

Loffland Bros. No. 1 Fontenot, sec. 16-10s-3w. T.D. 9,003 ft.; 7-in. csg. 8,943 ft.

Starks—Calcasieu Parish

Capital Oil Co. No. 1 Lutcher-Moore, sec. 24-9s-13w. R.U.
Lutcher Moore No. 3 fee, sec. 19-8s-12w. Drlg. sh. 3,212 ft.

Sulphur—Calcasieu Parish

Union Sulphur Co. No. 853 fee, sec. 20-9s-10. T.D. 1,039 ft.; run 10¾-in. csg.
Union Sulphur Co. No. 852 fee, sec. 29-9s-10w. Drlg. sd. 3,312 ft.
Union Sulphur Co. No. 851 fee, sec. 29-9s-10w. Drlg. sh. 3,812 ft.

St. Martinsville—St. Martin Parish

Tide Water Oil Co. No. 1-B Smedes, sec. 18-11s-6e. T.D. 8,925 ft.; heaving sh.; abd.

Valentine—Lafourche Parish

Pan American Prod. Co. No. 10 Harang, sec. 7-17s-20e. T.D. 6,977 ft.; P.B. 3,000 ft.; T.D. 6,144 ft.; 7-in. csg. 6,120 ft.; comp.; no gauge.
Pan American Prod. Co. No. 12 Harang, sec. 7-17s-20e. Drlg. sh. 6,165 ft.
Pan American Prod. Co. No. 13 Harang, sec. 8-17s-20e. 16-in. 210 ft.

Venice—Plaquemines Parish

Tide Water Oil Co. No. 4 Manhattan Fruit Co., sec. 26-21s-30e. T.D. 7,263 ft.; run Schlumberger.

Vinton—Calcasieu Parish

Katina Oil Co. No. 2 Vincent, sec. 34-10s-12w. T.D. 4,140 ft.; sdtrkd.; T.D. 3,215 ft.; 7-in. csg. 3,215 ft.; swbd. S.W.; plg. screen; pulled drk. in; rebuilding.
Superior Oil Co. No. 1 Gray, sec. 4-11-12w. 7⅝-in. csg. 3,907 ft.; drlg. sd.&sh. 6,647 ft.

White Castle—Iberville Parish

T. D. Humphray No. 1 E. B. Adams, sec. 1-11s-12e. S.D. 6,067 ft.; P.B. and sdrkd.; drlg. sh. and shells 7,160 ft.

S. LOUISIANA WILDCATS

Acadia Parish

H. E. Dalton No. 1 Setting, sec. 17-7s-1w. T.D. 5,106 ft.; P.B. to approx. 500 ft.; drlg. sh. 3,014 ft.
Gulf Oil Corp. No. 1 Euclia Broussard, sec. 49-10s-2w. Drlg. sand 7,750 ft.
Humble O. & R. Co. No. 1 R. A. Sarver sec. 35-10s-1e. T.D. 9,526 ft.; rmg.; 9⅝-in. csg. 7,550 ft.; drlg. sh. 9,732 ft.
Magnolia Pet. Co. No. 1 Duson, sec. 14-8s 2w. Drlg. sand 8,121 ft.
T. S. Markley No. 1 Daigle, sec. 19-7s-2e. Drlg. sh. 7,945 ft.

Calcasieu Parish

D. & D. Oil Co. No. 2 Lutcher-Moore, sec. 1-8s-13w. T.D. 8,340 ft.; run 9⅝-in. csg. drlg. plug; csg colpsd; T.D. 8,579 ft.; 1,747 ft. of 7-in. csg. cmtd. 8,579 ft.; drlg. sh. 8,685 ft.
Federal Pet. Co. No. 1 Sabine Tram Co., sec. 25-18s-14w. 10¾-in. csg. 1,981 ft.; drlg. sh. 7,280 ft.
Union Sulphur Co. No. 1 J. A. Bel, sec. 10-10s-10w. 10¾-in. csg. 1,216 ft.; drlg. sh. 8,100 ft.
Wheeler Oil Corp. No. 2 Sch. Ld., sec. 16-9s-7w. R.U.

Cameron Parish

Humble O. & R. Co. No. 1 Miami Corp., sec. 8-14s-5w. 20-in. pipe set 188 ft.; drlg. sdy. sh. 8,362 ft.

Cameron Parish—Gulf of Mexico

Superior Oil Prod. Co. et al No. 1 State-Gulf of Mexico, 3,800 ft. W, 6,200 ft. S of SE cor. of irregular sec. 4-15s-8w 10¾-in. csg. 1,157 ft.; drlg. sand and rock 5,625 ft.

East Baton Rouge Parish

Cavalier Oil Co. No. 1 Elliott, sec. 3-9s 2e. T.D. 6,127 ft.; D.S. stuck.

Evangeline Parish

Schlicher Prod. Co. No. 1 J. A. Perkins, sec. 35. Top salt 4,924 ft.; drlg. salt 4,924 ft.; no report.

Iberia Parish

Texas Co. No. 2-B Vermilion Bay, sec. 20-16s-5e. Drlg. sh. and L. 8,594 ft.

Jefferson Parish

Triangle Oil Co. No. 1 Conroe, sec. 12S-12s-11e. T.D. 3,752 ft.; D.S. stuck.

Jefferson Davis Parish

Continental Oil Co. No. 1 Faye, sec. 31-10s-3w. 10¾-in. csg. 1,999 ft.; drlg. sh. 7,937 ft.
Humble O. & R. Co. No. 1 T. S. Stegall, sec. 20-9s-5w. 13⅜-in. csg. 2,032 ft.; drlg. sh. 5,120 ft.
Union Sulphur Co. No. 1 Calcasieu National Bank, sec. 12-9s-6w. Core sand S.O. at 8,057 ft.

Lafourche Parish

Amerada Pet. Corp. No. 1 South Coast Corp., sec. 34-15s-19e. T.D. 8,745 ft.; 9⅝-in. csg. 7,636 ft.; T.D. 9,216 ft.; S.D. for repairs.
Gulf Oil Corp. No. 3 State P.P., sec. 36-23s-21e. Recvd. 1,000 ft. of oil on 6-min. D.S.T. at 6,749-6,846 ft.; 9⅝-in. csg. 6,832 ft.; drlg. 7,121 ft.; rec. 2,000 ft. P.L.O. on D.S.T. 6,958-70 ft.; T.D. 7,289 ft.; P.B. 6,971 ft.; top salt 7,741 ft.; T.D. 8,728 ft.; salt; using hole for geophysical work.
Wm. Helis No. 2 City of New Orleans sec. 19-23s-23e. 10¾-in. csg. 2,646 ft.; top salt 7,946 ft.; T.D. 7,974 ft.

Plaquemines Parish

Gulf Oil Corp. No. 3 State (Jackson dist) T.D. 8,144 ft.; rec. 1,500 ft. P.L.O. on D.S.T. 8,127-44 ft.; running 9⅝-in. csg.

St. Bernard Parish

Southern Sulphur Co. No. 2 State Lake Borgne, sec. 38-14s-15e. 13¾-in. csg. 30' ft.; T.D. 3,461 ft.; 7-in. csg. 3,461 ft.; drlg. sdy. sh. 3,567 ft.
Texas Co. No. 4 State, sec. 14-10s-9e. Drive piling.

St. Martin Parish

Pan American Ref. Co., sec. 11-13s-9e. Drlg. sh. 2,810 ft.
Shell Pet. Corp. No. 1 Unit, sec. 11-14s-12e. M.I.
Texas Co. No. 10 St. Martin, sec. 15-8s-7e. Drlg. sh. 8,157 ft.

St. Mary Parish

Shell Pet. Corp. No. 1 Barbour, sec. 21-15s-12e. Drlg. sh. 7,125 ft.
Texas Co. No. 1 State-Bateman Lake, sec. 21-16s-12e. 7⅝-in. csg. 10,515 ft.; T.D. 11,879 ft.; soft formation; P.B. 11,100 ft.; stuck 5¾-in. csg. while running to 10,745 ft.

Terrebonne Parish

Barnsdall Oil Co. No. 1 Dilbert, Stark & Brown Sur., sec. 10-16s-15e. Drlg. sdy. sh. 10,437 ft.

ARKANSAS

Columbia County

Havner, Reaves & Hose No. 1 Brandon, SW NW SW sec. 34-11-13. Cg. 3,153 ft. (Calhoun Co.).
Kerr-Lynn Oil Co. No. 1 Barnett, sec. 14-17-20. Drlg. 5,385 ft.
E. O. Olds No. 1 Dennis, NE SE SW sec. 4-17-21. S.D. 3,925 ft.
Standard of La. No. 1 J. P. McKean. SW sec. 8-16-22w. T.D. 7,259 ft.; swbg. 7,309 ft.
Tide Water-Seaboard Oil Co. No. 1 Crumpler, SW NE SW sec. 24-17-19w. Cg. 7,128 ft.

Miller County—Rodessa

F. W. Burford No. 4 Ahren, SE SE SW sec. 10-20-28. 7-in. 6,039 ft.; swbg.; T.D. 6,067 ft.
F. W. Burford No. 1-E A. A. Capps, sec. 13-20-28. Comp. 197 bbls. 18 hrs.; T.D. 6,020 ft.
F. W. Burford No. 1-A J. O. Gerrald, NE cor. sec. 15-20-28. 7-in. 6,030 ft.; T.D. 6,070 ft.
H. L. Hunt No. 4 Womack, NE SE SE sec. 10-20-28. Comp. 10 B.P.H.; T.D. 6,086 ft.
H. L. Hunt No. 5 Womack, SW SW SE sec. 10-20-28. Drlg. 5,925 ft.
Rodger Lacy No. 1 Sartor, SE W½ sec. 15-20-28. Straightening hole 1,495 ft.
Rodger Lacy No. 2 Grogan, NE E½ W½ sec. 15-20-28. Drlg. 1,900 ft.
W. M. Layton No. 3 Terry, SE W½ W½ sec. 14-20-28. Drlg. 5,675 ft.
McClanahan et al No. 4 Capps, NE NE SW sec. 11-20-28. Tstg.; T.D. 6,075 ft.
McClanahan et al No. 1 Easton, S½ NW SW sec. 12-20-28. Fsg. D.S. 4,280 ft.

McClanahan No. 1 T. J. Hopkins, SE SW NE sec. 11-20-28. Cg. 6,100 ft.
McClanahan et al No. 2 T. J. Hopkins, C sec. 11-20-28. Drlg. 5,200 ft.
McMurray No. 1-A Thomas, NW E½ W½ sec. 13-20-28. Drlg. 5,035 ft.
McMurray No. 2-B Thomas, SW SW SE sec. 12-20-28. Drlg. 4,772 ft.
J. R. Ostrom No. 1 J. O. Gerrald, NW E¼ sec. 15-20-28. C.O.; T.D. 6,079 ft.
Parks et al No. 1 Gerrald, sec. 11-20-28. Drlg. 5,744 ft.
Skelly Oil Co. No. 1 Thomas, SW SE SW sec. 12-20-28. Rng. Schlumberger; T.D. 6,068 ft.
A. M. Sutton No. 1 Cross, SE cor. SE NE sec. 11-20-28. Drlg. 5,746 ft.
S. O. Thomason No. 1 Greer, SW SW NW sec. 11-20-28. Drlg. 5,585 ft.
Texas Canadian Oil Co. No. 1 Thomas sec. 12-20-28. Drlg. 4,394 ft.

Miller County—Other

Odel Hinson No. 1 Montana Realty Co O.W.D.D.; perf. 7-in. 5,105-50 ft.; T.D. 5,325 ft.

Pulaski County

A. L. Kitselman No. 2 A. L. Kitselman, Jr., SE SE SW sec. 2-1s-13e. Cg. 1,426 ft

Union County—Schuler

E. M. Jones No. 2 Marine Oil Co., SW NW SE sec. 17-18-17. Drlg. 6,950 ft.

E. M. Jones No. 3 Marine Oil Co., NE NW SE sec. 17-18-17. Drlg.
E. M. Jones No. 4 Marine Oil Co., SE SW SE sec. 17-18-17. Drlg. 5,580 ft.
Lion Oil Ref. Co. No. 1-A M. D. Justiss NE NW NE sec. 19-18-17. R.U. to D.D. 6,015 ft.
Lion Oil Ref. Co. No. 1 Marine Oil Co. NE SE SW sec. 17-18-17. Drlg. 5,400 ft.
Lion Oil Ref. Co. No. 4-B Edna Morgan. NW SW SE sec. 18-18-17. R.U.
Lion Oil Ref. Co. No. 3-B Edna Morgan NE NW SE sec. 18-18-17. Drlg. 1,982 ft.
Lion Oil Ref. Co. No. 1-C D. and J. C Morgan, NE SE SE sec. 18-18-17. Drlg. 1,800 ft.
Marine Oil Co. No. 2 M. D. Justiss, sec. 18-18-17. Drlg. 5,240 ft.
Phillips Pet. Co. No. 1 E. Gan, SW SE NE sec. 18-18-17. Cg. 7,525 ft.
Phillips Pet. Co. No. 1 Jennings, NW SW NE sec. 18-18-17. Drlg. 2,250 ft.
Alice Sidney Oil Co. No. 2 Morgan, SE NE SE sec. 18-18-17. Rmg.; T.D. 7,554 ft.
Alice Sydney Oil Co. No. 3 Morgan, NW NE SE sec. 18-18-17. Drlg. 1,400 ft.

Union County—Other

Ark. So. Oil Co. No. 1 Simmons, SE NW sec. 15-18-18. S.D. 2,200 ft.
W. D. Winfield No. 2 Southern Kraft Corp., sec. 18-16-14. T.D. 2,728 ft.; 7-in. 2,721 ft.

TEXAS

Week Ending November 13

GULF COAST FIELDS

Lockridge—Brazoria County

Gulf Oil Corp. No. 4 Carrie Baker, J. W. Hall Sur. 10¾-in. csg. 1,332 ft.; T.D. 6,368 ft.; flow. 27 B.P.H., ¼-in. ck.
Gulf Oil Corp. No. 1 Great Southern, E. D. Robertson Sur. 9⅝-in. csg. 7,145 ft.; T.D. 9,257 ft.; tstg.
Kirby Pet. Co. No. 2 Carrie Baker, J. W. Hall Sur. 10¾-in. csg. 1,400 ft.; T.D. 6,367 ft.; perf. csg. 6,364-66 ft.; tstg.
McCurdy and Johnson No. 1 State, Brazos River. Drlg. Sd.&L. 4,519 ft.; sdtrkd. hole.
Shell Pet. Corp. No. 5-A Ramsey, J. W. Hall Sur. Drk.
Shell Pet. Corp. No. 2-B Ramsey, J. W. Hall Sur. T.D. 6,361 ft.; 7-in. csg. 6,-361 ft.; P.B. 6,358 ft.; perf. 6,354-57 ft.; showed gas.
Shell Pet. Corp. No. 4 Ramsey, J. W Hall Sur. T.D. 6,373 ft.; flow. 6 B.P.H., 10/64-in. ck.

Old Ocean—Brazoria County

Harrison & Abercrombie No. 2 Armstrong, Polly & Chance Sur. Drlg. sh. 5,917 ft.
Harrison & Abercrombie No. 1 Copeland-Osborne, C. Breen Sur. Drlg. sh. and L. 9,910 ft.
Harrison & Abercrombie No. 1 Smith, C. Breen Sur. 9⅝-in. csg. 7,016 ft.; T.D. 10,638 ft.; dropped csg. in hole; cmt. 5-in. inside 7-in. at 10,630 ft.; perf. csg. to test.

Sandy Point—Brazoria County

H. J. DeArman No. 1 Edmundson, D. Talley Sur. T.D. 6,606 ft.; 5½-in. csg. 6,520 ft.; P.B. 6,500 ft.; perf. csg.; 6,505-90 ft. showed S.W.; prep. to abdn.
H. J. DeArman No. 3 Fite, D. Talley Sur. T.D. 6,520 ft.; P.B. 6,498 ft.; perf. csg. 6,483-96 ft.; I.P. 96 B.P.D., 10/64-in. ck.
Stanolind O. & G. Co. No. 2 Fite, D. Talley Sur. 9⅝-in. csg. 995 ft.; T.D. 6,498 ft.; 5¾-in. csg. 6,492 ft.; I.P. 56 B.P.D., ¼-in. ck.

West Columbia—Brazoria County

Texas Co. No. 5 Phillips, George Tennille Sur. Drlg. sd. 4,412 ft.
Texas Co. No. 17 Abrams, Geo. Tennille Sur. T.D. 5,515 ft.; 7-in. csg. 5,462 ft.; I.P. 558 B.P.D., ¼-in. ck.
Texas Co. No. 18 Abrams, George Tennille Sur. R.U.
Texas Co. No. 88 Hogg, George Tennille Sur. Drlg. sd. and L. 2,912 ft.
Texas Co.-Sterling O. & R. Co. No. 4 Phillips, Geo. Tennille Sur. 10-in. csg. 1,195 ft.; T.D. 5,745 ft.; 7-in. csg. 5,645 ft.; W.O.C.
Texas Co. No. 2 T. L. Smith, Geo. Tennille Sur. T.D. 5,547 ft.; 7-in. csg. 5,-433 ft.

Calhoun—Heyser—Victoria County

Blanco Oil Co.-Buchanan No. 2 Dunn-Woody, A. Sisneros Sur. T.D. 5,607 ft.; 7-in. csg. 5,602 ft.; perf. csg. 5,594-5,600 ft.; flowed oil; killed; pulling screen to make squeeze job.
Blanco Oil Co.-Buchannan No. 3 C. S. Dunnwoody, A. Sisneros Sur. Drlg. sh. 5,502 ft.
Geo. H. Echols No. 6 W. H. Bennett, J. E. Galban Sur. T.D. 5,746 ft.; tstg.
Gulf Oil Corp. No. 1 Bonner, J. E. Galban Sur. Drlg. 2,612 ft.
Gulf Oil Corp. No. 1 T. P. Traylor, J. E. Galban Sur. 7-in. csg. 5,580 ft.; drlg. 5,927 ft.
Humble O. & R. Co. No. 19-B P. H. Welder, A. Sisneros Sur. T.D. 5,490 ft.; tstg.
Humble O. & R. Co. No. 4 H. T. Marshall, T.D. 5,484 ft.; perf. csg. 5,463-69 ft.; tstd. 1,000 ft. oil; making squeeze job.
Humble O. & R. Co.-Plymouth Oil Co. No. 5 Marshall, A. Sisneros Sur. R.U.
Humble O. & R. Co. No. 18-B P. H. Welder, A. Sisneros Sur. R.U.
Magnolia Pet. Co. No. 3 O. M. Lander. J. E. Galban Sur. Loc.
Magnolia Pet. Co. No. 4 Lander, J. Galban Sur. T.D. 6,250 ft.; P.B. 5,400 ft.
Normandie Oil Co. No. 8 J. G. Cook, A. Sisneros Sur. R.U.
Normandie Oil Co. No. 9 Cook, A. Sisneros Sur. T.D. 5,599 ft.; tstg.
Portilla Drlg. Co. No. 11 C. P. H. Welder, A. Sisneros Sur. R.U.
Sinclair Prairie Oil Co. No. 2 W. G. Bennett, A. Sisneros Sur. Drlg. 2,730 ft.

Cotton Lake—Chambers County

Humble O. & R. Co. No. 2 Howard, B. Winfree Sur. Core sh. 6,312 ft.
Texas Crusader Oil Co. No. 9 Kilgore, J. Townsend Sur. T.D. 6,290 ft.; 7-in. csg. 6,282 ft.; flwd. oil and S.W.; perf. 6,276-78 ft.; tested S.W.; made squeeze job; reperf. csg.; flow oil and S.W.

Seabreeze—Chambers County

Sun Oil Co. No. 1 Hoffman, T&N.O. Sur. 131 Drlg. sd. and sh. 1,976 ft.
Sun Oil Co. No. 2-A Hebert-Broussard, T.&N.O. Sur. 127. Drlg. sd. and sh. 1,584 ft.

Hitchcock—Galveston County

N. W. Hunter No. 1 Maco Stewart, J. Spillman Sur. Drlg. sh. 3,538 ft.

Silsbee—Hardin County

Republic Prod. Co.-Houston Oil Co. No. 24 Brooks, G. W. Brooks Sur. T.D. 6,-321 ft.; cutting and pulling drill stem.
Republic Prod. Co.-Houston Oil Co. No. 25 Brooks, G. W. Brooks Sur. Core 6,935 ft.

Fairbanks—Harris County

Amerada-Stanolind O. & G. Co. No. 3 Carpenter, F. Fry Sur. T.D. 6,834 ft.; perf. 6,813-20 ft.; I.P. 214 bbls. fluid per day; ¼-in. ck.; 19% S.W.
Amerada-Stanolind O. & G. Co. No. 1-B Dopslauf, W.C.R.R. Sur. No. 2, Blk. 1. Drk.

Clinton—Harris County

Stanolind O. & G. Co. No. 1 M. E. Oates. Reels & Trobough Sur. Drlg. sh. 2,515 ft.

Friendswood—Harris County

Circle Oil Co. No. 1 E. B. Ross, George Dedrick Sur. T.D. 6,514 ft.; abd.
Gulf Bd. Oil Co. No. 1 E. B. Ross, G. B. Burnett Sur. Spd.
Humble O. & R. Co. No. 1 G. M. DeGeorge and Green, T. Choate Sur. T.D. 6,080 ft.; I.P. 528 bbls. P.L.O. per day; ¼-in. ck.
Humble O. & R. Co. No. 1 Hicks-Hoidale, Perry and Austin Sur. Drlg. sh. 4,-158 ft.
Humble O. & R. Co. No. 1 Jones & May, Perry and Austin Sur. Drlg. sh. 1,-078 ft.
Humble O. & R. Co. No. 1 Kiesling, T. Choate Sur. R.U.
National Standard Oil Co. No. 1 Coward, Perry & Austin Sur. Loc.

Ganado—Jackson County

Texas Co. No. 1 Mortg. Ld. & Inv. Co., Morris & Cummins Sur. No. 3. T.D. 5,100 ft.; 7-in. csg. 5,085 ft.; perf. csg. 5,080-82 ft.; I.P. 4 B.P.H.; 13/64-in. ck.

LaBelle—Jefferson County

Sun Oil Co. No. 1 John Ward, 933 ft. S of No. 2 Broussard, Wm. Burton Sur 18⅝-in. csg. 109 ft.; 9⅝-in. csg. 8,538 ft.; 7-in. csg. 9,951 ft.; T.D. 10,147 ft.; cmtd. off bttm.; perf. csg. 8,545-90 ft.; tstg.

Hardin—Liberty County

Jack Frazier No. 2 Lynott & Buffam, J. Robson Sur. R.U.
Jack Frazier No. 1 Buffam-Benning, J. Robeson Sur. R.U.
Gulf Oil Corp. No. 1 V. B. Hinson, H. B. Johnson Sur. R.U.
Jameson-Bryon No. 1 W. B. Hinson, H. B. Johnson Sur. Drlg. sh. 3,210 ft.
Shell Pet. Corp. No. 1 Hanchey, H. B. Johnson Sur. T.D. 7,622 ft.; 5-in. csg. 7,609 ft.
Strake Pet. Corp. No. 3 Finley, A. B. Hardin Sur. Sdy. sh. 810 ft.
Strake Pet. Corp. No. 2 W. T. Finley, A. B. Hardin Sur. Drlg. sh. 4,240 ft.

South Call—Newton County

Houston Oil Co. No. 2 Sabinetram. 10¾-in. csg. 1,936 ft.; W.O.C.

Bay City—Matagorda County

Hamman Expl. Co. No. 1 Sloan, J. T. Belknap Sur. 10¾-in. csg. 1,200 ft.
Smith and McDannald No. 1 Gaines, E. Hall Sur. Drlg. sh. 2,810 ft.

Buckeye—Matagorda County

United North & South Development Co No. 1 G.B.M., Cotton Lge. 7-in. csg. 8,-667 ft.; drlg. sh. 10,038 ft.

Palacios—Matagorda County

Atlantic-McCarthy No. 3 Foley Ld. Co., L. Goodwin Sur. Drk.
Glenn McCarthy No. 2 Foley, L. Goodwin Sur. T.D. 8,590 ft.; sdtrk.; T.D. 8,548 ft.; cmtd. 5-in. liner; W.O.C.
Sun Oil Co. No. 1 Bay Shore Farms, Lewis Goodwin Sur. Drlg. sh. 11,327 ft.

Orange—Orange County

Tillery & Ryan No. 1 Chesson, Wm. Dyson Sur. 10¾-in. csg. 1,180 ft.; T.D. 5,946 ft.; 7-in. csg. 5,930 ft.; swbd., flwd. for short time; sanded up; pulling screen and liner to reset.

Segno—Polk County

Gulf Oil Corp. No. 8 Wing, sec. 14, I.&G N. Sur. T.D. 6,765 ft.; 5-in. csg. 6,630 ft.; P.B. 6,627 ft., perf. csg. 6,261-6,264 ft.; flowed 531 bbls. fluid, 50% oil and S.W.; squeeze off perf.; reperf. csg. 6,231-34 ft.; cleaning into pits showing oil and wash wtr; no gauge.

Spurger—Tyler County

Republic Prod. Co. No. 6 Hurd, N. Hurd Sur. Drlg. sh. 1,297 ft.
Republic-Houston Oil Co. No. 5 Hurd fee N. Hurd Lge. T.D. 8,180 ft.; 7-in. csg. 7,759 ft.; perf. 7,697-7,710 ft.; I.P. 612 bbls. per day; ¼-in. ch.

McFaddin—Victoria County

Barnsdall Oil Co. No. 1 J. A. McFaddin Est., Foster Lewers Sur. R.U.

Tellener—Victoria County

Gulf Oil Corp. No. 1 Mahon and Buhler, W. C. Carroll Sur. T.D. 6,167 ft.; P.B. and sdtrkd.; drlg. sh. 6,937 ft.
Union Oil Co. No. 8 Keeran Est., M. DeLeon Sur. R.U.

Magnet—Wharton County

Atlantic Refining Co. No. 7-B H. C. Cockburn, Smith and McKenzie Sur. T.D. 1,580 ft.; W.O.C.
Atlantic Ref. Co. No. 6-B Cockburn, Smith & McKenzie Sur. T.D. 5,540 ft.; 7-in. csg. 5,537 ft.; perf. csg. 5,524-30 ft.; made squeeze job; testing; would not flow; pull screen and liner; flowing P.L.O.; no gauge.
Humble O. & R. Co. No. 4 Cockburn, S. Castleman Sur. Drlg. sh. 4,310 ft.
Humble O. & R. Co. No. 3 Cockburn, Smith & McKenzie Sur. T.D. 5,540 ft.; 5½-in. csg. 5,535 ft.; would not flow; reset screen.
Texas Crusader Oil Co. No. 3 Cockburn. Smith & McKenzie Sur. T.D. 5,540 ft.; 7-in. csg. 5,534 ft.; I.P. 135 bbls. per day; ⅛-in. ch.

Pickett Ridge—Wharton County

Texas Crusader Oil Co. No. 3 J. F. Kubella, G. C. Gifford Sur. Drlg. 700 ft.
Texas Co. No. 3 Marek, George Reynolds Sur. R.U.

GULF COAST WILDCATS

Chambers County

Merit Oil Co. No. 1 T. & M. Wright, C. Smith Sur. T.D. 7,515 ft.; 7-in. csg. 6,602 ft.; perf. csg. 6,425-76 ft.; flow. 5 bbls. P.L.O.P.H. then went dead; W.O.

Colorado County

O. C. Garvey No. 1 Buback-Ernest. M. Lapham Sur. R.U.

Fort Bend County

Chapman Minerals Corp. No. 1 Sugarland Industries, Geo. Brown & Belknap Sur. Drlg. sh. 4,837 ft.

Hardin County

John Mayo No. 1 Hayden, W. K. Griffin Sur. R.U.

Harris County

H. C. Cockburn No. 1 White, Harris & Carpenter Sur. Drlg. sh. 3,537 ft.
Amerada-Stanolind O. & G. Co. No. 1 E. M. Wells, A. Larson Sur. R.U.

Jackson County

Cockburn et al No. 1 Hodges, I.&.G.N. Sur. No. 7. Abdn. 6,520 ft.
Cockburn & Hargrove No. 1 Mike Strauss, A. M. Clare Sur. Drlg. sh. 3,412 ft.
Sam G. Harrison et al No. 1 H. A. Meyers, O. York Sur. Spd.
Magnolia Pet. Co. No. 1 West Ranch, R. Musquez Sur. R.U.

Jefferson County

Shell Pet. Corp. No. 1 W. P. McFaddin, S. A. Pace Sur. No. 2. R.U.
Lee Bros. No. 1 Wilson, C. L. Nash Sur. Drlg. sh. 6,029 ft.

Liberty County

Humble O. & R. Co. No. 1 E. J. Moore, M. Whittington Sur. Drlg. sd. 1,000 ft.

Madison County

Faucett & Kyle No. 1 Bailey, T. Boatwright Sur. T.D. 600 ft.
Faucett & Kyle No. 1 Connor, J. P. Phillips Sur. T.D. 1,630 ft.; 5½-in. csg. 1,535 ft.
W. H. Lawrence No. 1 Gustavis, J. Woodruff Sur. Drlg. sand 1,356 ft.

Matagorda County

Sun Oil Co. No. 1 Fred Robbins, C. H. Vandeveer Sur. Drlg. sh. 4,269 ft.

Orange County

Glenn H. McCarthy No. 1 Brown, B. Garner Sur. R.U.

Polk County

Stewart Oil Co. No. 1 E. J. Galloway, J. Ringgold Sur. 10¾-in. csg. 1,000 ft.

Trinity County

Gossage-Green & Thompson No. 1 R. E. Thompson, J. A. Hickey Sur. T.D. 1,164 ft.; S.D.
Funk-Walker-Bilnoski No. 1 Trinity State Bank. B. F. Wright Sur. R.U.

Waller County

J. Brian Eby No. 1 Wm. Rice Institute, H. Stephens Sur. Drlg. sh. and sand 4,647 ft.
Stanolind O. & G. Co. No. 1 Security Trust Co., H.&T.C. Sur. Drlg. sh. 2,910 ft.

Walker County

W. B. Gossage No. 1 Carey Land & Dev. Co., D. McDonald Sur. S.D. 2,220 ft.

S. W. TEXAS WILDCATS

Atascosa County

L. W. Steiren No. 1 Crawford. 4 mi. W of Anchorage. Drlg. rock 3,391 ft.

Bastrop County

J. W. Bibb No. 1 Lentz, F. Wilkenson Sur. S.D. 1,350 ft.
Hantho-Nelson, Inc., No. 2 Litton, Cedar Creek Community. Drlg 310 ft.
Sunrise Oil Co. No. 1 Smith, E. Standifer Sur. O.W.W.O.; old T.D. 2,502 ft.; prep. P.B. 1,712 ft.

Bell County

W. H. Vernor No. 1 McQueen, 9 mi. S of Belton. S.D. 2,160 ft.

Caldwell County

Fain Gillock No. 1 Kelly, Berry Sur. Acd.; swbd. wtr. and oil; 5½-in. at 1,457 ft.; T.D. 1,710 ft.
Heard & Heard No. 1 Brown, McCarley Sur. S.D. 2,300 ft.
McNeill Pet. Co. No. 1 Moreno, Allen Sur. Drlg. 679 ft.

Comal County

L. H. Wilson No. 1 Alexander, D. Benton Sur. Skdg. on.

DeWitt County

Ike Howeth No. 1 Gips, Moore Sur. Drlg. sh. 3,943 ft.

Dimmitt County

Texas & Maryland Corp. No. 1 McKnight, Blk. 13, sec. 23. Drlg. sh. 3,917 ft.

Duval County

T. R. Andrews No. 1 Hazelwood, Hopkins Sur. R.U.
Magnolia Pet. Co. No. 1 D.C.R.C., Sur. 261. Drlg. 3,137 ft.
Magnolia Pet. Co. No. 1 Ruiz, Sur. 190. Drlg. 5,457 ft.
Penn-Palangana Oil Co. No. 2 Schallert, Sur. 239. S.D.; T.D. (cor.) 365 ft.
Slaughter & Hugle No. 1 Hunter Est., sec. 515. T.D. 4,750 ft.; rng. csg.

Edwards County

Amon G. Carter No. 1 Sweeten, SE¼. Blk. 2, Sur. 49. T.D. 5,090 ft.; P.B. to sdtrk.

LEGAL

Department of the Interior, United States Land Office, Las Cruces, New Mexico. Notice is hereby given that Lots 3 and 4, NE¼ SW¼ Sec. 31, T. 25 S., R. 37 E., N. M. P. M., New Mexico, containing 119.86 acres in the Jal Field, New Mexico, are offered to the responsible qualified bidder of the highest bonus per acre for lease under section 17 of the act of February 25, 1920 (41 Stat. 437), as amended by the act of August 21, 1935 (49 Stat. 674) at the royalty rate scale in the lease form shown in Circular 1386 at a sale to be held in the United States Land Office, Las Cruces, New Mexico, at ten o'clock, December 21, 1937. The successful bidder must deposit on the date of the sale a certified check on a solvent bank, or cash, for 1/5 of the amount bid, and file the showing of qualifications to receive a lease, required by section 7 of Circular 1386. The remainder of the bonus bid and the annual rental of $1 per acre must be paid prior to the issuance of the lease. The bidders are warned against violation of the provision of Sec. 59 of the United States Criminal Code, approved March 4, 1909, prohibiting unlawful combination or intimidation of bidders. The right is reserved to reject any and all bids at the discretion of the Secretary of the Interior. Register.

Dan Auld No. 1 Henderson, sec. 46, Blk. E. Drlg. 713 ft.
C. V. Lyman No. 1 Brown, Blk. 3. Spdg.

Frio County

Pagenkopf & Jamieson No. 1 Houston Est., 2,254-ac. tr., J. Figuerroa Sur. S.O. 2,610-03 ft.; set csg. to test 7-in. at 2,480 ft.; swbg.; S.O.&G. and wash wtr.: T.D. 2,651 ft.; set csg.; P.B. 2,607 ft.; tstg.

Goliad County

Goliad Oil Corp. No. 1-A Cole, Lot 33, Goliad town tr. T.D. 5,687 ft.; rmg. to btm.
Ruai Swiger No. 1-B Wood, J. Shearn Sur. Drlg. sh. 3,682 ft.

Guadalupe County

Elimag Oil Co. No. 1 Hardiman, Dikes Sur. T.D. 2,201⅛ ft.; rng. csg.
Mehu Oil Corp. No. 1 Schulze, Chenault Sur. Drlg. ch. 1,456 ft.
Wellington Oil Co. No. 1 Koepp, W. H. Smith Sur. Set csg.; sat. ch. 1,572 ft.; W.O.C.

Hidalgo County

Atlantic Ref. Co. No. 1 American Rio Grande. Cg. sdy. sh. 8,219 ft.
Y. & B. Oil Co. No. 1 Waite, Tr. 382, Los Jidos Gr. G. sd. 5,399-5,422 ft.; cg. ahead 5,470 ft.

Jim Wells County

H. M. Hill et al No. 1 Kuether, Lots 70 and 75, sec. 52, Haldeman Subd. Drlg. 1,521 ft.
Howell et al No. 1 Talbot, 181-ac. tr., Lavaca Gr. Drlg. 5,807 ft.
Magnolia Pet. Co. No. 7 Seeligson, 10,433-ac. tr., Los Jaboncillos Gr. T.D. 8,162 ft.; P.B. 6,770 ft.; W.O.C.

Karnes County

Ivan Howard No. 1 Moczygemba, Erasmo Seguin 5. League Gr. Top sd. S.O. 2,159 ft.; oil sd. 2,174-78 ft.; set csg. 2,187 ft.; rmd. to btm.

Kenedy County

La Sal Vieja Oil Corp. No. 1 Garcia Ld. & Cattle Co., Blk. 95, Tr. 73. T.D. 5,252 ft.; prep. drl. ahead.

Kleberg County

Superior Oil Co. No. 1 Koch, sec. 32, Blk. 26. Set surf. csg.; W.O.C.

LaSalle County

Ralph B. Reed No. 1 Yeager, Blk. 7, Sec. 8, Wallace Subd., Yeager ranch. Drlg. 375 ft.

Lee County

Jas. E. Pederson No. 1 Turner, Davis Hudson Sur. S.O.&G. 6,140-80 ft.; sdtrkd. at 4,600 ft. and drld. to 6,132 ft.; S.O.&G.; set csg. 6,021 ft.; acdzg. with 20-bbl. load; when opened well flwd. 20-bbl. head and went dead; swbd. oil and wtr.; acd.; to put on pmp.; S.D.

Live Oak County

Chiquita Oil Co. No. 1-A Taylor-Lark, Scrugham Sur. Set csg. 972 ft.; W.O.C.
L. Franklin No. 1 Odem, R. Everitt Sur. Drlg. 1,027 ft.
Chas. Hanna No. 1 Wedding, Haughy Sur. D.&A. 1,900 ft.
Holland Oil Co. No. 1 Alamo Lbr. Co., Lot 26, Blk. 16, Sur. 99. R.U.
Reynosa Oil Co. No. 1-A Nichols, 100-ac. tr., Subd. "B," Simeon Ryan Sur. Drlg. 387 ft.
V. G. Schimmel No. 1 West, sec. 59, Haas Sur. R.U.

Maverick County

Wellington Oil Co. No. 1 Chittam, 330 ft N line, 2,310 ft. W line, sec. 129, Blk 7. T.D. 3,287 ft.; flwd. intermittently at rate of 10 B.P.H. and went dead; acidized.; swbd. 7 B.P.H.; T.D. 3,287 ft.; acdzd.; C.O.

McMullen County

Adams & LeFevre No. 2 Selman, sec. 58. Drlg. 2,016 ft.
Alabama Minerals Oil Co. No. 2 Gordon, Sur. 127. D.&A. 2,416 ft.
Coyle & Bedwell No. 1 Two Rivers Rnch. Co., sec. 60. S.D. 10 ft.

Medina County

Adams et al No. 1 Kreisle, Sur. 908. R.U
R. S. Bolling No. 1 McMenemy, Sur. 33⅛ R.U.
M. L. Walker No. 1 Riff, Hans Sur. No. 43. Drlg. sh. 311 ft.

Milam County

Kingdor Expln. Co. No. 1 Stidham. S.D. 3,818 ft.

Nueces County

Culton & Meador No. 1 Bailey Est., Blk. 65, J. Elliff Subd., Joaquin Lopez de Herrera Sur. Cg. 5,016 ft.
Mills Bennett Prod. Co. No. 1 Johnson, sec. 125, Pauls Subd. T.D. 5,658 ft.; P.B. 5,115 ft.; rng. csg.
Richardson Pet. Co. No. 1 Cunningham, sec. 77. Cg. 5,026 ft.
Sannix Oil Co. No. 1 Nesloney, 760-ac. tr., Casa Blanca Gr. Cg. 4,727 ft.
Southern Minerals Corp. No. 2 King, Blk. 6, R. King Farm Lots. D.S.T. 4,020-33 ft.; rec. 640 ft. oil, 850 ft. S.W. in 20 min. at 35 lbs. W.P.; T.D. 6,219 ft.; P.B. to 4,000 ft.; perf. 4,017-20 ft.; clg.
Union Prod. Co. No. 1 Simmons, 1,000-ac. tr., Agua Dulce Gr. Drlg. sh. 5,426 ft.

Refugio County

Hogan Oil Co. No. 1 Kelley, M. & A. Roache Sur. Drlg.

San Patricio County

Argo Oil Corp. No. 1 Soehnge, 159.66-ac. tr., Blk. 11, Schleicher & Joseph Subd., Delgado Gr. T.D. 4,962 ft.; top sd. 4,957 ft.; well tried to blow out; killed to deepen; T.D. 6,310 ft.; set 7-in. protective csg. 6,200 ft.; W.O.C.
Rutherford O. Corp. No. 1 George, Lot 12, Geo. Paul Subd. Spd.

Starr County

Calderoni-James-Foliette No. 1 Rodriguez Blk. 6, Sh. 56, Porc. 80. Set 4½-in. csg. 1,483 ft.; T.D. 1,511 ft.; P.B. T.D. 1,756 ft.; S.D.; W.O.O.
Collins No. 1 Guerra, Sh. 6, San Jose Gr. Drlg. 4,532 ft.
Dodd Tr. No. 1 Wardner, Vela Sur., Porc. 84. Drlg. 1,267 ft.
G. E. Dodd No. 1 Wood Est. Set 10-in. surf. csg. 80 ft.; W.O.C.
Sioux Oil Co. No. 6 Ricaby, Porc. 83. Drlg. 1,437 ft.
Sun Oil Co. No. 1-F Guerra, Salvador Garcia heirs Sur., Porc. 109. Drlg. 1,497 ft.
Transwestern Oil Co. and Davenport No 3 Slick, sec. 527. T.D. 6,862 ft.; cutting D.S.

Travis County

W. O. Caffey No. 1 Bremond, 104.5-ac. tr., Santiago del Valle Sur. Drlg. 514 ft.
W. O. Caffey No. 1 Meister, Conrad Sur. S.D.
D. E. Hamer No. 1 Benson, Wilson Sur. drlg. L. 404 ft.
LaShell, Gardner & Wilson No. 1 Wilson, Blk. 1. T.D. 650 ft.; S.O.; to core deeper and test.
J. E. Mills No. 1 Washington, Navarro Sur. S.D. 1,150 ft.

Victoria County

W. V. Bowles No. 1 Robertson, T. C. Burnham Sur. Loc.
Stanolind O. & G. Co. No. 1 Henderson & Pickering. T.D. 7,468 ft.; fsg.

Webb County

Lemp Oil Co. No. 1 Clark, 500-ac. tr., Porc. 33. Drlg. 427 ft.
Lewis et al No. 1 Garza, Sur. 48. Drlg. 1,237 ft.
Mills Bennett Prod. Co. No. 1 Gates, Blk. 28, Sur. 200. Drlg. sh. 2,163 ft.

Willacy County

Magnolia Pet. Co. No. 1 Armendiaz, Sh. 4, San Juan de Carricitos Sur. Cg. s.w. sd. 6,572 ft.

Wilson County

Arnold, Dink, Stone & Haley No. 1 Black, 1,102.3-ac. tr., hrs. of Juan and Simon Arocha Sur. S.D. 706 ft.
Pat Higgins No. 1 Higgins, Rodriguez Sur. 27. D.&A. 2,414 ft.
W. D. Parkinson No. 1 Burney, Arocha Sur. Drlg. sh. 159 ft.

Zapata County

Coyle-Calloway No. 1 Flores, Porc. 37. Drlg. 655 ft.

S. W. TEXAS PROVEN

Lamar—Aransas County

Barnsdall Oil Co. No. 1 Kate Edwards Lot 87, Lamar Townsite. Old T.D. 7,996 ft.; cmtd. D.S. stuck in hole and shot 7,495-7,501 ft.; washed; no show; shut in.

McCampbell—Aransas-San Patricio Counties

Atlantic Ref. Co. No. 9-C McCampbell, Lot 2, Blk. 41. Cg. 7,097 ft.
Atlantic Ref. Co. No. 3 Maryland Trust, Blk. 23. T.D. 7,135 ft.; testing g. sd. 6,541-50 ft.
Atlantic Ref. Co. No. 1-D Murray, Lot 3, Blk. 37. Cg. 7,198 ft.
Atlantic Refining Co. No. 2-A Porterfield, Lot 8, Blk. 14. Drlg. sh. 6,021 ft.
Atlantic Ref. Co. No. 5-B Porterfield, Blk 1. T.D. 7,210 ft.; set csg.; perf. 7,173-77 ft.; washing.
Atlantic Refining Co. No. 6-B Porterfield, Lot 6, Blk. 10, McCampbell Subd. Drlg. 6,872 ft.
Atlantic Ref. Co. No. 1-C Porterfield, Lot 8, Blk. 12. T.D. 8,889 ft.; pulling D.S.
Atlantic Ref. Co. No. 2-D Porterfield, Blk. 37. T.D. 7,212 ft.; prep. set csg.
Buckingham Oil Co. No. 2-B McCampbell, Lot 13, Blk. 40. O.W.W.O.; old T.D. s.w. S.D. 7,526 ft.; recomp. 50 B.P.D., ⅞-in. ch.; perf. 7,195-98 ft.
Franston Oil Co. No. 1 Murray, Lot 7, Blk. 37. Perf. 7,109-13 ft.; T.D. 7,247 ft.
Graham Oil Co. No. 2 Edwards, Lot 16, Blk. 7. Cg. 7,109 ft.
Graham & Buckingham Oil Co. No. 3 Porterfield, Blk. 9, Lot 8. O. and G. sd. 6,539-60 ft.; gas sd. 6,757-75 ft.; T.D. 7,140 ft.; set csg.; W.O.C.
Landreth Prod. Co. No. 7-A McCampbell, Lot 1, Blk. 39. O.&G. sd. 7,099-7,124 ft.; T.D. 7,125 ft.; set 7-in. csg. 7,125 ft.; perf. 7,117-19 ft.; comp.; est 60 bbls. dist. per day; ⅞-in. ck.
Norman Bertieson No. 2-A Murray, Lot 5, Blk. 37. T.D. 7,127 ft.; set 7-in. csg.; W.O.C.
Guy Warren & Carmos Drlg. Co. No. 1 Kleineck, Lot 12, Blk. 9. Set 7-in. csg. at T.D. 7,160 ft.; perf. 7,125-30 ft.; comp. 120 B.P.D.

Alta Verde—Brooks County

Dick Young No. 5 Singer, Blk. 13, Sur. 312. D.&A.; T.D. 1,814 ft.

Buchanan—Caldwell County

Easton & Manning No. 2 Bozarth, Cannon Sur. T.A.
Edwill Oil Co. No. 4 Browne, Chas. M. Cannon Sur. Set 7-in. csg. 1,880 ft.; R.U. pump.; T.D. 2,287 ft.; comp. 60 B.P.D. on pump.
G. D. Fairtrace No. 1 McMahon, Pinchback Sur. T.D. L. 2,404 ft.; comp. 52 B.P.D. on pump.
Goode & Mayton No. 3 McConnell, Spillar Sur. Comp. 118 B.P.D.; pmp. top Edwards 1,900 ft.; T.D. 1,932 ft.
McAlester Fuel Oil Co. No. 3 Miears, Cannon Sur. Set surf. csg. 20 ft.; T.D. Edw. 2,512 ft.; P.B. 2,250 ft.; comp. 31 B.P.D.

Salt Flat—Caldwell County

Louis Crouch No. 1 Davis, Hinds Sur. T.D. 2,612 ft.; set 5½-in. csg. 2,298 ft.; comp. 55 B.P.D. no pump.
E. J. Koeugh No. 1 Tiller, Hinds Sur. T.D. 2,475 ft.; comp. 70 B.P.D.

Benavides—Duval County

Arkansas Fuel Oil Co. No. 8 Rossi, Flores Gr. No. 25. Ran tbg.; set 7-in. csg. 4,753 ft.; comp.
Benedum & Trees Oil Co. No. 8 Puig, 750-ac. tr., San Andres Gr. Oil sd. 4,794-4,800 ft.; set csg. 4,794 ft.; T.D. 4,802 ft.; flwd. 44 B.P.D. on ¼-in. ck.; comp. 128 B.P.D., ¼-in. ck.
Blanchard No. 1 Puig, Blk. 59, Sur. 238, O.W.W.O.: T.D. 5,425 ft.; P.B. 5,409 ft.; reperf. 5,394-98 ft.; swbd. 54 bbls. oil first 8 hrs. on ¾-in. ck. and few hds. S.W.; went dead.
Bridwell Oil Co. No. 6 Anciro, Santos Flores Gr. No. 25. Drlg. 2,100 ft.
Burton Drlg. Co. No. 1 Southland Life, Blk. 12. Sweden Farm Lots. D.S.T. 4,791-4,823 ft.; tstg.
Glasscock Drlg. Co. No. 2 Farias, Santos Flores Gr. No. 25. R.U.
Frank Gravis Oil Co. No. 1 Valleo San Andres Gr. Set csg. 516 ft.; W.O.C.
Gravis & Doran No. 7 Puig, San Andres Gr., sec. 24. R.U.
Navarro Oil Co. No. 3-A Owens, Blk. 19, Sweden Subd. Comp. 176 B.P.D., 5/32-in. ck.; T.D. 4,775 ft.
Navarro Oil Co. No. 4 Owens, Santos Flores Gr. No. 25. Drlg. 3,814 ft.
Reynosa Oil Co. No. 7 Wilson, sec. 9, Sweden Farm Lots. Set 7-in. csg. 4,773 ft.; W.O.C.
Russ Pet. Co. No. 10 Farias, sec. 9, Sweden Farm Lots. Set csg. 4,811 ft.; W.O.C.
Standard Oil Co. of Kans. No. 5 Parr, 80-ac. tr., San Andres Gr. Sd. 4,744-68 ft.; completing.
Standard Oil Co. of Kansas No. 6 Rossi, Santos Flores Gr. Sd. 4,782-95 ft.; completing.
Woodley Pet. Co. No. 1 West, Sweden Farm Lot No. 10. Sd. 5,354-64 ft.; T.D. 5,378 ft.; set csg. 5,359½ ft.; washing in.

Hoffman—Duval County

Cox & Hamon No. 30 Green, Sur. 118. Comp. 70 B.P.D.; O. sd. 2,718-20 ft.
F. T. Oil Co. No. 1 Sutherland, Sur. 122. D.&A. 2,750 ft.

Labbe—Duval County

Magnolia Pet. Co. No. 10 Labbe, Sur. 1. Sd. 2,848-52 ft.; comp. 63 B.P.D. on pump.

Seven Sisters—Duval County

Rudco O. & G. Co. No. 1 Ellis, Sur. 308. Drlg. 907 ft.
Wellington Oil Co. No. 8-D Welder, Sur. 381, Cole sd., oil, 1,719-20 ft.; D.S.T. 1,714-20 ft.; rec. 1,700 ft. P.L.O. 8 min.; W.P. 50 lbs.; set 7-in. csg. 1,714 ft.; comp. 240 B.P.D. oil and wtr.

Thomas-Lockhart—Duval County

Lockhart Bros. No. 1 Rogers, Sur. 277. Drlg. 3,437 ft.
Taylor Pet. Co. No. 1 Parr, 40-ac. tr., Sur. 279. Oil and gas sd. 4,699-4,707 ft.; oil sd. 4,724-25 ft.; set plug 4,642-4,884 ft.; T.D. 5,162 ft.; comp. 6 B.P.D. dist., ¾-in. ck.

Luling—Guadalupe-Caldwell Counties

Spokane O. & G. Co. No. 1 Hibbits, J. Henry Sur. T.D. 2,522 ft.; D.&A.

Nash Creek—Guadalupe County

F. M. Gallagher No. 1 Howell, J. Darst Sur. R.U.

LaBlanca—Hidalgo County

Gulf States Oil Co. No. 2-A Delta Orchards, Lot 3, Sur. 94. Drlg. hd. sh. 4,012 ft.

Las Animas—Jim Hogg County

Darby Pet. Co. No. 1-A Holbien, Blk. 61, sec. 6, Holbien Subd., Las Animas Gr. T.D. 3,808 ft.; P.B. sd. 1,765-81 ft.; to comp. as gasser.

West Premont—Jim Wells County

Smith & Story No. 1 Dansard, C Lots 16 and 17, sec. 72. T.D. 3,252 ft.; D.&A.
Homer Presnall No. 1 Holmes, Lots 59 and 70, sec. 76. T.D. 2,259 ft.; D.S.T. rec. 50 ft. oil 4½ min.; set csg. 2,257 ft.; D.&A.

South Burnell—Karnes County

W. J. Goldston No. 1 McKinney, Ballard Sur. D.&A. 3,636 ft.
Luling O. & G. Co. No. 8 Boyce, Still Sur. Comp.; no gauge; T.D. 3,659 ft.
Luling O. & G. Co. No. 9 Boyce, Still Sur. Sd. 3,655-70 ft.; cg. ahead.

Chittim—Maverick County

Texas Gas Service Co. No. 6 Chittim, O.W.W.O.; O.T.D. 5,592 ft.; sdtrk. 5,400 ft. to recomp. in Glenrose.

Ezzell—McMullen County

R. P. Holland No. 3 Matkin, Lot 2433. Oil sd. 1,500-10 ft.; 7-in. 1,482; T.D. sh. 1,512 ft.; comp. 356 B.P.D. pmp.
E. M. Jones No. 4-B Ezzell, sec. 20. O. sd. 1,516-22 ft.; comp. 264 B.P.D.
E. M. Jones No. 13 Ezell, sec. 23. Comp. 203 B.P.D. pmp.; T.D. 1,520 ft.
E. M. Jones No. 19 Ezzell, sec. 23. O. sd. 1,514-19 ft.; comp. 149 B.P.D. pmp.
E. M. Jones No. 21 Ezzell, sec. 23. Comp. 224 B.P.D. pmp.; O. sd. 1,486-92 ft.

Agua Dulce—Nueces County

Texon Rov. Co. No. 3 Driscoll-Sevier, Chapman Part., Palo Alto Gr. Drlg. 5,263 ft.
Union Prod. Co. No. 1 Galliday, Agua Dulce Gardens Subd., Benton Pastures. T.D. 4,042 ft.; fsg.

Luby—Nueces County

Seaboard Oil Corp. No. 6 Luby, Blk. 2, Sh. 4, Luby Subd. Sd. 5,043-73 ft.; set 7-in. csg. 5,073 ft.; comp. 155 B.P.D., ⅛-in. ck.; perf. 5,055-58½ ft.
Seaboard Oil Corp. No. 2 Shaeffer, Sh. 3, Blk. 2, Luby Subd. Drlg. 4,377 ft.
Stanolind O. & G. Co. No. 4 McCann, Falcon Sur. Sd. 4,312-26 ft.; tstd. 630 ft. oil.

Saxet—Nueces County

Greta Oil Corp. No. 1 Isensee, Sur. 404. T.D. 4,910 ft.; perf. 4,893-4,903 ft.; tstd. gas; plgd. and reperf.; flwg.; comp. 196.4 B.P.D.; perf. 4,885-89 ft.

Stratton—Nueces County

Camp Prod. Co. No. 3 Wardner, sec. 12, Stratton Ranch Subd. Drlg. sh. 1,107 ft.

Midway—San Patricio County

Sun Oil Co. No. 3 Coggin, Paul Subd. Loc. abd.

Cole—Webb County

O. W. Killam No. 59 Bruni, sec. 8, Foltz Subd., Arispe Gr. Set 5¼-in. csg. 3,401 ft.; comp. 40 B.P.D., 7/11-in. ck.; T.D. 3,417 ft.

Killam—Webb County

French Oil Corp. No. 4 Perez, Sur. 1107. Set csg. 1,990 ft.; T.D. 1,998 ft.; comp. 75 B.P.D. pmp.
O. W. Killam No. 19 Garcia, Sur. 786. Oil sd. 1,983-88 ft.; set 5½-in. csg. 1,979 ft.; comp. 100 B.P.D. on pmp.
Navarro Oil Co. No. 3 Perez, Blk. 15, Sur. 1,007. Drlg. 1,657 ft.
Rowan & Hope No. 3 Laurel Bros., Sur. 1006. T.D. 1,943 ft.; 7-in. csg. 1,934 ft.; W.O. pmp.

Lopez—Webb-Duval Counties

C. H. Andrus No. 1 Billings, Sur. 10. Set 5½-in. csg. 2,262 ft.; perf. csg.; comp. 17,000,000 ft. gas; T.D. 2,262½ ft.

Oilton—Webb County

Bridwell Oil Co. No. 9 Martin, Sur. 2167. Oil sd. 1,905-08½ ft.; set 7-in. csg. 1,901 ft.; comp. 185 B.P.D. pmp.; T.D. 1,909 ft.
Cox & Hamon No. 1 Garcia, Sur. 262. Drlg. 457 ft.
Cox & Hamon No. 1 Martin, Blk. 22, Sur. 1,105. Sd. 1,932-38 ft.; comp. 155 B.P.D. pmp.
Gypsy Oil Co. No. 3-A Martin, Sur. 2167. Oil sd. 1,883-1,914 ft.; comp. 170 B.P.D. pmp.
Gypsy Oil Co. No. 5-A Martin, Sur. 2167. Oil sd. 1,912-21 ft.; set 5½-in. csg. 1,912 ft.; comp. 115 B.P.D. pmp.
Gypsy Oil Co. No. 6-A Martin, Sur. 2,167. Comp. 100 B.P.D. pmp.; T.D. 1,934 ft.
Hamil & Smith No. 5 Martin, Sur. 2167. Drlg. 1,518 ft.
Porter & Blanchard No. 2 Laurel Bros., Sur. 1,006. Cg. 2,957 ft.

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GIDDENS-LANE BUILDING -:- SHREVEPORT, LA.

Rowan & Hope No. 17 Laurel, Sur. 1,006. Drlg. 267 ft.

LaSal Viejo—Willacy County

Shell Pet. Corp. No. 2 Yturria, Sh. 64, Carricitos Gr. T.D. 8,011 ft.; stdg.

Batesville—Zavalla County

Wilcox O. & G. Co. No. 2 Gillam, G.W.T. &P. R.R. Sur. R.U.

EAST TEXAS

(Border Counties)

Cass County

Ark. La. Gas Co. No. 1 Neilon, Thomas Gillespie Sur. 7-in. 5,954 ft.; T.D. 5,996 ft.

Bay Oil Corp. No. 4 Cobb, G. Crowder Sur. Drlg. 4,970 ft.

W. C. Feazel No. 1 Parker, G. Crowder Sur. Drlg. 4,913 ft.

Union Prod. Co. No. 5 fee 575, B. Holmes Sur. Drlg. 5,207 ft.

Union Prod. Co. No. 4 J. S. Hall, J. N. Jackson Sur. Cg. 5,920 ft.

Union Prod. Co. No. 2 Thrower. Comp. 10 B.P.H.; T.D. 5,933 ft.

Union Prod. Co. No. 3-A Starke, D. Gilliam Sur. Drlg. 4,710 ft.

Marion County—Rodessa

Arkansas-La. Gas Co. No. 1 Neilson, A. D. S. Coy Sur. Cg. 5,830 ft.

Geo. Barham No. 1 Whitfield, R. Bennington Sur. 1,000 bbls. fluid, 80% S.W., 20% oil daily; will plug back; T.D. 6,109 ft.

Fohs Oil Co. No. 3 Mary McReynolds, A. D. S. Coy Sur. 7-in. cmt. 6,133 ft.; swbg.; T.D. 6,149 ft.

Fohs Oil Co. No. 1 W. T. Neilon, SE cor. 70-ac. Neilon Sur. Drlg. 5,654 ft.

Fohs Oil Co. No. 2 M. Reynolds, A. D. S. Coy Sur. Gas well shut in; T.D. 6,014 ft.

Heyser-Heard & Clardy No. 1 L. Henderson, R. Bennington Sur. Drlg. 5,883 ft.

Holcomb & Thomason No. 1-B L. Henderson, U. Ewing Sur. Drlg. 4,981 ft.

Mid-Continent Pet. Corp. No. 4 Sory, A. D. S. Coy Sur. Tstd. 6,000,000 ft. gas; spray oil; T.D. 6,082 ft.

Shell Pet. Corp. No. 1 Cooke, R. Bennington Sur., 80-ac. tr. Drlg. 3,420 ft.

Shell Pet. Corp. No. 1 L. Henderson Unit, R. Bennington Sur. Drlg. 4,030 ft.

Union Prod. Co. No. 5 Hutchinson, A. D. S. Coy Sur. Tstd. 5,000 ft. oil 15 min.; T.D. 6,092 ft.

Union Prod. Co. No. 3-A Starke, D. Gilliam Sur. R.U.

United Prod. Co. No. 3 Hutchinson, A. D. S. Coy Sur. Comp. 157 bbls. dly.; T.D. 6,091 ft.

United Prod. Co. No. 4 Hutchinson, A. D. S. Coy Sur. Comp. 41 bbls. dly.; T.D. 6,145 ft.

Panola County

Danciger O. & G. Co. No. 1 Tatum, A. Bissell Sur. T.D. 6,514 ft.; perf. csg. 5,253-49 ft.; tstd. S.W.; T.D. 6,514 ft.

Magnolia Pet. Co. No. 2 E. A. Hull, The Applewhite Sur. T.D. 8,717 ft.; fsg. for D.P.

WEST TEXAS WILDCATS

Andrews County

M. S. Forgeron et al No. 1 Lockhart & Brown, C NE¼ sec. 20, Blk. A-41, P.S.L. Sur. S.D. 179 ft.

Gulf Oil Corp. No. 1 State, sec. 8, Blk. 14. T.D. 4,106 ft.; R.U.S.T.

Bailey County

Duffey & Etz No. 1 Enochs, Tract 66, League 182, Floyd Co. School Lands Sur. Drlg. 2,080 ft.

Borden County

Continental Oil Co. No. 1-A Clayton, sec. 27, Blk. 32, Twp. 4n, T.&P. Sur. Drlg. 610 ft.

Brewster County

F. C. Dodson No. 1 Texas American Synd. sec. 66, Blk. 10, G.H.&S.A. Sur. Drlg. 6,024 ft.

Storey No. 1 Wilson, sec. 3, Blk. 212, T.& St.L. Sur. S.D. 2,545 ft.

Cochran County

P. N. Wiggins et al No. 1 Dean, NE cor. League 58, Martin Co. School Lands. C.O. 5,020 ft.

Pete Wiggins et al No. 1 C. Slaughter Dean, C Lab. 26, League 92, Lipscomb Co. Sch. Ld. S.D.; W.O. 5,085 ft.

Concho County

Sam Murray No. 1 R. G. Armor, sec. 105, T.&N.O. Sur. Spudded and S.D.

Coke County

Barnett Pet. Co. No. 1 J. R. Mims, sec. 39, Blk. W, T.&P. Sur. S.D. 1,005 ft.

H. E. Ogden et al No. 1 Rawlins, sec. 390 Blk. B-21. S.D. 515 ft.

Crane County

Wilcox O. & G. Co. No. 1 McKnight, sec. 9, Blk. 46, Twp. 3s, G.M.M.B.&A. Sur. T.D. 6,177 ft.; pipe stuck; fsg.

Crockett County

Moore Bros. No. 1 P. Perner, sec. 37, Blk 2, I.&G.N. Sur. Fsg. 7,297 ft.

Stewart & Cormas No. 1 Hoover, sec. 1, Blk. FF, B.B. Sur. S.D.; W.O. 1,450 ft.

Culberson County

Grisham & Hunter No. 1 fee, sec. 14, Blk. 42, P.S.L. Sur. M.I.S.T.

C. A. Jarrell et al No. 1 C. M. Caldwell, C of SW¼ sec. 15, Blk. 100, P.S.L. Sur. S.D. 151 ft.

Dawson County

R. Albaugh No. 1 D. Hogg, SE of SE sec 17, Blk. 34, Twp. 4n, T.&P. Sur. S.D. 3,865 ft.

E. L. Wilson No. 1 Scanlon, sec. 83, Blk. M, E.L.R.R. Sur. T.D. 4,965 ft.; pmp. 96 bbls. fluid per day, 7% wtr.

Dickens County

C. E. Litchfield No. 1 Harris, sec. 354, Blk. 1, H.&G.N. Sur. S.D. 1,602 ft.

J. F. Morrisey et al No. 1 C. L. Bird, sec. 290, Blk. 1, H.&G.N. Sur. Fsg. 1,520 ft.

Edwards County

A. P. Carter No. 1 F. D. Sweeten, S&E sec. 48, Blk. 2, B&B Sur., 1½ mi. E of Rock Spgs. T.D. 5,090 ft.; prep. D.D.

Fisher County

I. J. Allen No. 1 H. S. Newman, Lot 49, Bastrop Co. Sch. Lds. Drlg. 3,000 ft.

Bond Oil Corp. No. 1 N. Bertram, 1 mi. S of Sylvester. Drlg. 2,000 ft.

Consolidated Oil Co. et al No. 1 Florida. Drlg. 3,325 ft.

General Crude Oil Co. No. 1 Morrow, sec. 185, Blk. 2, H.&T.C. Sur. Drlg. 3,300 ft.

Richmond Drlg. Co. No. 1 Brown, O.T.D. 3,002 ft., R.U.C.T., sec. 66, Blk. 3, G. W.T.&P. Sur. Loc.

Floyd County

Mills Bennett No. 1 T. Montgomery, F. J. Latham Sur., 6 mi. S of Floydada. R. U.R.

Gaines County

Continental Oil Co. No. 2 Jones, sec. 1, Blk. A-8, P.S.L. Sur. T.D. 4,680 ft.; R. U.S.T.

Mitchell & Sullivan No. 1 Shell, T. S. Riley, sec. 447, Blk. G, C.C.S.D.&R.G. N.G. Sur. T.D. 131 ft.; R.U.R.

Shell Pet. Corp. No. 1 Robertson, sec. 344, Blk. G. Drlg. 4,570 ft.

Garza County

M. L. Richards No. 1 Slaughter. Drlg. 1,500 ft.

Glasscock County

O. B. Greathouse No. 1 Burns, sec. 221, Blk. 29, W.&N.W. Sur. Loc.

Hockley County

The Texas Co. No. 2 Slaughter, Labour 92, League 37, Zavalla Co. Sch. Lds. Drlg. 3,642 ft.

Howard County

W. F. McDermott et al No. 1 Lucas, sec. 18, Blk. 29, Twp. 1n, T.&P. Sur., 5 mi. N of Dodge pool. S.D. 2,070 ft.; W.O.

Hudspeth County

Haymon Krupp Oil & Ld. Co. No. 1 Thaxton, SE¼ sec. 34, Blk. 74, Twp 6, U.R. 3,250 ft.

Haymon Krupp No. 1 Briggs, sec. 24, Blk 73, Twp. 7, T.&P. Sur. Drlg. 1,180 ft.

Jeff Davis County

H. D. Wilcox et al No. 1 Jones-Coffield S.D. 3,315 ft.; S.R.

Loving County

Barnett Pet. Co. No. 1-A Johnson, sec. 2, Blk. 57, Twp. 1, T.&P. Sur. Drlg. 2,965 ft.

Barnett Pet. Corp. No. 1-B W. D. Johnson, sec. 12, Blk. 56, Twp. 1, T.&P. Sur. Comp.

Carpenter & Grierson No. 1 Mrs. Bennie Barnes, sec. 22, Blk. C-25, P.S.L. Sur. Loc.

Martin County

J. L. Green et al No. 1 O. B. Holt, C of Labour 20, Lge. 319, Garza Co. Sch. Lds. Drlg. 3,650 ft.

Pecos County

Adams No. 1 A. A. Gray, sec. 593, Blk. 105, G.C.&S.F. Sur., 12 miles N of Fort Stockton. Loc.

Humble O. & R. Co. No. 1 Belding et al, 9 mi. SW of Ft. Stockton. T.D. 2,560 ft.; fsg.

Humble O. & R. Co. No. 1 Butz, sec. 104, Blk. OW. R.U.M.

Humble O. & R. Co. No. 1 Pryor, sec. 100, Blk. OW. S.D. 40 ft.

Messenger & Osburn No. 1 Humble-Young, sec. 49, Blk. 10, H.&G.N. Sur. T.D. 1,807 ft.

S. Thompson No. 1 Elsinore Cattle Co., sec. 54, Blk. D, G.C.&S.F. Sur. Drlg. 6,163 ft.

Thompson & Minshall No. 1 Michaelson, 660 ft. N and W, sec. 24, Blk. 146, T.& St.L. Sur. Drlg. 528 ft.

Wilcox O. & G. Co. No. 1 Serf, sec. 27, Blk. 130, T.&St.L. Sur. Drlg. wtr. well.

Presidio County

L. C. Brite No. 4 fee, C NW¼ sec. 113, Blk. 12, G.H.&S.A. Sur. Drlg. 3,775 ft.; sdtrkd. hole.

Reeves County

Barnett Pet. Corp. No. 1 Ely, sec. 38, Blk. 71, P.S.L. Sur., 12 mi. NW of Toyah. Drlg. 1,585 ft.

Runnels County

Homer Price No. 1 Beddo, sec. 51, Thompson Casey Sur. Drlg. 2,210 ft.

K-Z Oil Co. No. 1 B. Fletcher, E. C. Good Sur. Drlg. 4,383 ft.

Stephenson & Glober No. 1 Fowler, sec 150, E.T.R.R. Sur., 2 mi. NE of Ballinger. T.D. 1,095 ft.; S.D.

Schleicher County

J. M. Cooper No. 2 B. Page, sec. 40, Blk. L, G.H.&S.A. Sur. T.D. 4,710 ft.; drlg. by csg.

Tex-Tor Oil Corp. No. 1 Judkins & Spencer, C of SW¼ sec. 33, Blk. A, A.&B. Sur. Drlg. 4,016 ft.

Scurry County

Robinson Drlg. Co. No. 1 Martin, sec. 147, H.T.&C. Sur. Drlg. 2,935 ft.

T. G. Shaw Oil Co. No. 1 First Natl. Bank. T.D. 2,420 ft.; fsg. for bailer.

Sterling County

Wilcox O. & G. Co. No. 1 Kinnebrew Est., sec. 101, Blk. 2, H.&T.C. Sur. Drlg. 3,425 ft.

Sutton County

Ordovician Oil Co. No. 1 Evans, sec. 1, L. Stubblefield Sur., 32 mi. SE of Sonora. S.D. 3,475 ft.

Terrell County

D. & S. Oil Co. No. 1 Sam Bell. S.D. 345 ft.

Tom Green County

Humble O. & R. Co. No. 1 Lewis & Wardlaw, sec. 5, Blk. 17, H.&T.C. Sur. T.D. 1,545 ft.; prep. run csg.

Upton County

Rutter et al No. 1 Egolb, sec. 5, J. H. Gibson Sur. Drlg. 850 ft.

Ward County

Hoss & Downey No. 1 Ross Avery, sec. 36, Blk. 1, H.&T.C. Sur. Loc.

L. F. White et al No. 1 Rector-Monroe, E cor. sec. 3, Blk. 1, W.&N.W. Sur. Top Del. L. 4,635 ft.; top Del. sd. 4,670 ft.; T.D. 4,710 ft., ran tbg.

Winkler County

Stogner & Pipkin No. 1 Blade, sec. 103, Blk. D, J. H. Gibson Sur. Loc.

Yoakum County

American Liberty Oil Co. No. 1 A. C. Thomas, 2,227 ft. S and 440 ft. W, sec. 864, Blk. D. Drlg. 2,580 ft.

American Liberty Oil Co. No. 1 Claywater. T.D. 5,083 ft.; flw. and tstg.

J. W. Murchison et al No. 1 Sawyer, SE¼, sec. 702, Blk. D. Cellar.

Denver Prod. & Ref. Co. No. 1-A Whittenburg, sec. 830, Blk. 4. T.D. 4,546 ft.; drlg., plug.

J. J. Greene et al No. 1 Nevels, sec. 709, Blk. D. Cg. 5,279 ft.

Skelly and Sun Oil Co. No. 1 Kiser, sec. 640, Blk. D. Drlg. 4,812 ft.

Standard of Texas No. 1 M. B. Sawyer, sec. 576, Blk. D, J. H. Gibson Sur. T.D. 5,403 ft.; C.O.

Texas Co. No. 1 Walker, sec. 794, Blk. D El. 3,656 ft.; T.D. 5,180 ft.; P.B. to 5,162 ft.; shot; acid.; swbg. oil and wtr.

P. N. Wiggins et al No. 1 Bartlett, sec. 359, Blk. D. Drlg. 4,530 ft.

E. C. TEXAS WILDCATS

Anderson County

Humble O. & R. Co. No. 1-C Southern Pine Lbr. Co. Cg. 7,717 ft.

H. L. Parsons No. 1 H. B. Hemby, 7 mi. NE of Navarro. M.I.R.

Angelina County

J. C. Bonham No. 1 Cameron Lbr. Co., E. Miller Sur., 3 mi. SE of Zavilla. Loc.

John Coates No. 1 J. L. Russell, Jose Morino Sur., E of Diboll. Drk.

Bowie County

King Oil Corp. No. 1 W. W. Ames, 800 ft. S and 1,650 ft. E of J. A. Tolbott Sur., 4½ mi. NW of Texarkana. Pits.

Cherokee County

J. G. Mays No. 1 Holmes, 330 ft. most northerly NE cor. of 108 acres, S. F. L. Noble Sur. Drlg. 4,000 ft.

Merica Oil Co. No. 1 Cherokee Dev. Co., A. J. Acker Sur., 2 mi. E of Maydelle. Drk.

E. H. Moore, Inc., No. 1 Chronister Lbr. Co., 6 mi. N and E of Wells, Tr. 71, Blk. 33, John Durst Gr. T.D. 5,925 ft.; rng. Schlumberger.

Falls County

McCleod et al No. 1 F. Bolton, J. R. Cockrill Sur., 4 mi. NW Rosebud. Fsg. 1,708 ft.

Freestone County

C. E. Rossiter No. 1 J. P. Fulton in J. P. Fulton Sur., 2½ mi. E of Donie. S.D. 956 ft.

Gregg County

Humble O. & R. Co. & Gulf O. Corp. No. 1 E. Robertson, M. Mann Sur., 2½ mi. SW of Longview Trinity test. El. 272 ft.; drlg. 6,878 ft.; D.S.T. 6,763-6,878 ft.; ⅜-in tbg. ck. top and bttm.; 30 ft. mud.

Henderson County

E. B. LaRue et al No. 1 Breedlove & Mills, J. Dunn Sur., 5 mi. NW of LaRue. M.I.M.

Wm. McDougall No. 1 Trinity, F. & S. Land Co., Blk. 1, H.&T.C. Sur. Drk.

Tide Water Assoc. et al No. 2-C McElreath & Suggett, W. P. Wyche Sur. T.D. 9,320 ft.; P.B. to 9,255 ft.; est. 15,000,000 ft. gas; D.S.T. 8,810-9,260 ft.; ⅞-in. tbg. ck. 40 min.; 510 ft. drlg. pipe; 13 stands mud and started blowing gas; B.H.P. 4,700 lbs.; P.B. from 9,260 ft. to 8,900 ft.; W.O.C.

Hill County

J. Willis No. 1 W. P. Ball, S. Marshall Sur., 3 mi. NW of Covington. M.I.M.

Hopkins County

Abbott & Ruthland No. 1 Peyton, J. Burkham Sur., 2½ mi. N of Sulphur Bluff. Drlg. 2,000 ft.

Leon County

Kelly & Fox No. 1 Bryant, A. M. Coultarn Sur., 1 mi. E of Marquez. S.D.

Limestone County

C. L. Brown No. 27 N. B. Boyd, R. B. Longbotham Sur., 3 mi. S of Wortham. T.D. 1,335 ft.; S.D.

Pure Oil Co. No. 16-T Kendrick, P. Varella Sur., Mexia field. T.D. 8,847 ft.; D.S. stuck.

Stanolind O. & G. Co. No. 1 T. Norris, in Thresher Sur., 5 mi. N of Kosse. 6,500-ft. test; ele. 528 ft.; S.D. 5,762 ft.; rep. rig.

Navarro County

Nowlin et al No. 1 Easterling, J. Mayor Sur., 2 mi. S of Chatfield. Drlg. 950 ft.

Mrs. Jane Robinson No. 1 Fortson Bros., Eli Smith Sur., 5 mi. NE Corsicana. S.D. 1,001 ft.

T. Sharpe et al No. 1 E. B. McDowell, T. Jordan Sur., 1½ mi. S of Bassets. Austin ck. 2,835-2,935 ft.; S.D. 2,970 ft.

Rusk County

J. W. Shipman et al No. 1 Citizens Bank, J. J. Y'Barbo Sur., 4 mi. NE of Henderson. S.D. 4,500 ft.

Trinity County

Billnoski et al No. 1 Trinity State Bnk., B. F. Wright Sur., 2 mi. S of Trinity. Loc.

Upshur County

L. & G. Oil Co. No. 1 H. Williams, Roeder Sur., 2 mi. NW of Gracetown. Drk.

J. K. Wadley No. 1 W. R. Thornton, P. Mauldery Sur., 3 mi. SW of Gracetown. Drlg. 3,245 ft.

RANGER (CENTRAL TEXAS) DISTRICT

Brown County

C. R. Cox, Tr., No. 1 Jan Lee, sec. 11, B.B.B.&C. Sur., NE cor. county. S.D. 240 ft.

H. P. Evans No. 1 J. T. Hall, 2 mi. N of Bangs, 220 ft. from N line and 11,008 ft. from W line of SW¼ sec. 25, H.T. &B.R.R. Sur. Drlg. 200 ft.

Guyle Greynolds No. 4 A. Leatherwood, 5 mi. E of Cross Cut, 650 ft. from N line and 200 ft. from W line of E½ Blk. 11, Juan Dalgado Sur. Rig up.

S. B. Roberts No. 1 Angell, 9 mi. SE Cross Cut, B. H. Garvin Sur. Drlg. 900 ft.

Ungren & Frazier and Paul Pitzer No. 1 Cox & McInnis, sec. 88, I. S. Tabor Sur. (map shows H.T.&B. Sur.). Drlg. 850 ft.

Callahan County

R. F. Gilman et al No. 1 W. A. Young, 5 mi. NW Clyde, sec. 37, B.B.B.&C. Sur. S.D. 793 ft.

Hal Hughes No. 1 Poindexter, sec. 350, Geo. Hancock Sur., 2 mi. NE of Oplin. Drlg. 3,150 ft.

J. C. Jackson et al No. 1 Thompson, 2 mi. S. Eula, sec. 30, B.B.B.&C. Sur. S.D. 1,500 ft.

Phillips Pet. Co. No. 1 Cozart, 1 mi. NW Scranton, M. Cherry Sur. Drlg. 1,650 ft.

R. F. St. John No. 1 A. E. Dyer, 4 mi. NW of Clyde, 1,385 ft. from E line and 1,323 ft. from S line of sec. 40, B.B.B. &C. Sur. Loc.

Walker & Webb No. 1 Ross, 1 mi. NE Clyde, sec. 81, B.B.B.&C. Sur. Drlg. 1,225 ft.

Woodley Pet. Co. No. 1 Flores-Deep, 5 mi. SE of Baird, sec. 149, B.B.B.&C. Sur. M.I.R.

Coleman County

J. F. Brock No. 1 J. H. Livingston, SE cor. SW¼ county, J. D. Waters Sur. No. 208. Drlg. 375 ft.

Dixie O.&G. Co. No. 1 Reaves, 6 mi. NW of Bangs, J. M. Rhine Sur. No. 629. Drlg. 850 ft.

Comanche County

N. D. Gallagher et al No. 1 Mrs. B. I. Terry, Desdemona pool, N. H. Kuykendall Sur. Rng. 6⅝-in. csg.

Dobbs Oil Co. No. 1 Hodges, sec. 11, Blk. 2, H.&T.C. Sur. Drlg. 2,000 ft.

Eastland County

G. D. Chastain et al No. 1 Weddington, 4 mi. N. Cisco, sec. 496, S.P.R.R. Sur. Drlg. 2,900 ft.

Hickok Prod. & Dev. Co. No. 1 J. E. Donovan, 5 mi. NW of Cisco, 660 ft. from N and E lines of NW¼ sec. 489, S.P. R.R. Sur. Loc.

J. D. Kittrell No. 1 Reynolds, 5 mi. E of Carbon, sec. 23, H.&T.C. Sur., Blk. 1. Drlg. 925 ft.

Monark O. & G. Co. No. 1 Downtain, sec. 14 H.&T.C. Sur. Blk. 4, 3 mi. N Eastland. S.D. 2,140 ft.

J. R. Nichols et al No. 1 R. W. Murray Hrs., 3½ mi. SE of Carbon, 330 ft. from N and W lines of SW¼ sec. 4, H.&T.C. Sur., Blk. 2. Loc. 2,100 ft.

Erath County

Arnold Oil Co. No. 1 McMillan, 2 mi. SE of Desdemona, T. H. Dixon Sur., Abst. 1,103. S.D. 2,475 ft.

J. Hickey et al No. 1 Smith, 5 mi. SE Desdemona, J. B. Smith Sur. Drlg. 2,985 ft.

Hoffman & Page No. 1 Clayton, D. J. O. Millard Sur., 2 mi. SE Desdemona. Drlg. 3,190 ft.

Jones County

E. P. Campbell et al No. 1 L. H. Lee, 5 mi. S Hawley, sec. 16, T.&P. Sur., Blk. 16. Drlg. 1,650 ft.

Grisham & Hunter No. 1 E. D. Appling, NW¼ county, 1,208 ft. from S line and 1,450 ft. from W line of SW¼ sec. 32, B.B.B.&C. Sur. Drlg. 600 ft.

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Fain, McGaha & Roberts No. 1 Daugherty, 2 mi. S Sandy Ridge pool, sec. 37, T.&P. Sur., Blk. 15. S.D. 1,943 ft.; tstg.

Fain & McGaha Oil Corp. No. 1 Francis Olson, 3 mi. NE Avoca, sec. 190, B.B.B. &C. Sur. T.P. 3,213 ft.; S.D. 3,214 ft.; set 6⅝-in. 3,210 ft.; W.O.C.

Fellmont & Adams No. 1 Woodson, 1¼ mi. SE Avoca, sec. 200, B.B.B.&C. Sur. Drlg. 2,160 ft.

Mack Hayes and Montour Oil Co. No. 1 Chittenden, 7 mi. SE Hamlin, Subd. 18, McMullen & McGloin Sur. 337. S.D. for csg.

W. L. Herring et al No. 1 J. W. Grogan, ½ mi. SE Truly, Maria Rita Longario Sur. Drlg. 2,270 ft.

T. D. Humphrey No. 1 Fielder, 2½ mi. E Anson, sec. 34, O.A.L. Sur. Drlg. 550 ft.

Iron Mountain and Humble No. 2 Jones & Stasney, 3 mi. NE of Avoca, sec. 196, B.B.B.&C. Sur. Drlg. 2,765 ft.

Bells Wells Oil Co. No. 1 M. Caton. S.D.

Oil States Expl. Co. No. 1 Olson, 4 mi. N Avoca, sec. 182, B.B.B.&C. Sur. Drlg. 2,100 ft.

Meaders & Heydrick No. 1 Ann Shaheen. 2 mi. SW of Nugent, 220 ft. from S and E lines of most easterly SE cor. of sec. 50, T.&P. Sur., Blk. 15. Loc.

Owen M. Murray et al No. 1 Rial, 2 mi. E Avoca, sec. 198, B.B.B.&C. Sur. Drlg. 1,975 ft.

Pet. Producers No. 1 J. S. Millsap et al, 3½ mi. SW Nugent, 220 ft. from S and E lines of NW¼ sec. 37, T.&P. Sur., Blk. 15. Loc.

Rhome et al No. 1 J. D. Freeman, 8 mi. SW Anson, sec. 6, T.&P. Sur., Blk. 17. Drlg. 2,490 ft.

Roeser & Pendleton No. 1 fee, 2 mi. NW of Nugent, 2,800 ft. from N line and 3,240 ft. from W line of sec. 4, T.&P. Sur., Blk. 15. M.I.M.; 3,400-ft. test.

Shaheen Oil Co. et al No. 1 Jenson, 2 mi. E of Avoca, sec. 198, B.B.B.&C. Sur. S.D. 2,150 ft.

Dale Smith & Bert Fields No. 1 C. L. Carter, 3 mi. SW of Nugent, 220 ft. from N and W lines of SE¼ of SE¼ sec. 37, T.&P. Sur., Blk. 15. Loc.

Stanton & Miller No. 1 Gaither, 4½ mi. N of Anson, sec. 38, B.B.B.&C. Sur. Drlg. 1,995 ft.

Ungren & Frazier et al No. 1 Carl Ecdahl, 3½ mi. NE Avoca, sec. 188, B.B.B.&C. Sur. Drlg. 3,250 ft.

Ungren & Frazier No. 1 Manley Heirs, SE cor. of county, 660 ft. from N and W lines of sec. 44, T.&P. Sur., Blk. 14. Drlg. 950 ft.

C. E. Waite, Trust, No. 1 Ray, 3½ mi. SE of Stamford, sec. 7, D.&D.A. Sur. Drlg. 2,500 ft.

Mills County

Balyaet & Boyd No. 1 Westbrook, 7 mi. W of Goldthwaite, 4,950 ft. from S line and 4,290 ft. from W line of Caldwell Co. Sch. Ld. Sur. Drlg. 850 ft.

Palo Pinto County

W. H. Clement No. 1 Federal Life Ins. Co., 2 mi. W Mineral Wells, sec. 51, T.&P. Sur., Blk. A (E of B). S.D. for pipe 400 ft.

Bill Cole et al No. 1 J. W. Harris Est., NW cor. county, De La Garza Sur. Drlg. 500 ft.

W. K. Gordon et al No. 1 Johnson, 5 mi N Gordon, John Bird Sur. Drlg. 850 ft.

Henry Hobbs et al No. 1 Bessie Holt, 4 mi. S. Graford, sec. 1,783, T.E.&L. Sur. S.D. 200 ft.

King Oil Co. No. 1 S. F. Lee, 4 mi. NW Graford, 933 ft. from N and W lines of sec. 1,744, T.E.&L. Sur. M.I.M.

Ernest Lloyd et al No. 1 McClure, 3 mi. NE Graford, sec. 2,004, T.E.&L. Sur. S.D. 1,200 for csg.

Shackelford County

J. F. Baker No. 1 Merrick Davis, NE cor. of S½ of county, 330 ft. from N and W lines of sec. 21, T.&P. Sur., Blk. 13. Drlg. 450 ft.

Joe DeGrazier No. 1 Harbough, E cen. part of county, sec. 1,563, T.E.&L. Sur. 4,500-ft. test; S.D. 300 ft.

Forest Dev. Corp. No. 1 T. G. Hindrick, NW cor. of county, 2,600 ft. from N line and 4,300 ft. from W line of sec. 1, A.B.&M. Sur. Spdg.

T. D. Humphrey No. 1 Alston, NE cor. county, sec. 16, H.&T.C. Sur., Blk. 3. Drlg. 1,060 ft.

C. J. Kleiner et al No. 1 Morris, 2 mi. NE Bluff Creek pool, sec. 187, E.T.R.R. Sur. Drlg. 1,550 ft.

Mesa Verde Oil Co. No. 1 Hennessey, 7 mi. E of SW cor. county, sec. 87, T.&P. Sur., Blk. 13. Drlg. 1,360 ft.

Owens-Snebold Oil Corp. No. 1 Haterius, sec. 163, B.B.B.&C. Sur. Drlg. 2,450 ft.

Stephens County

W. B. Hamilton No. 1 B. O. Grant, CWI of county, sec. 63, B.A.L. Sur. 2,500-ft test. Drlg. 2,775 ft.

I. C. Little No. 1 R. M. Rogers, NE¼ of county, 150 ft. from E line and 1,980 ft. from S line of sec. 28, T.&P. Sur., Blk. 5. Loc.

G. Willard Rich No. 1 M. M. Andrews, SW cor. county, 450 ft. from S line and 300 ft. from W line of N½ sec. 39, T. &P. Sur., Blk. 7. Loc.; 4,500-ft. test.

Stonewall County

General Crude Oil Co. No. 1 B. F. Harrison, NW cor. D. Harcrow Sur., 1½ mi. N of No. 1 Bryan. Drlg. 3,555 ft.

Tarrant County

E. E. Hoffpauir et al No. 2 W. H. Davis, 2 mi. S Arlington, H. Blackwell Sur. S.D. 2,140 ft.

Taylor County

Bert Fields et al No. 1 Sears, sec. 223, Blk. 64, H.&T.C. Sur. Drlg. 900 ft.

Dale H. Dorn No. 1 Hopkins, 1 mi. NW View, Subd. 20, sec. 120, Guadalupe Co. Sch. Ld. Sur. S.D. 3,100 ft.

A. Findley No. 1 Bowles Est., NE cor. county, sec. 26, B.A.L. Sur. Drlg. 1,976 ft.

Throckmorton County

Henry Zweifel No. 1 J. H. Lee, 4 mi. NE of Woodson, 930 ft. from E line and 2,011 ft. from S line of J. A. George Sur. Loc.

Wise County

Latex Oil Co. No. 1 Smith, 3 mi. E of Bridgeport, Jas. Couch Sur. T.D. 4,075 ft.; C.O. bridge; testing.

NORTH TEXAS WILDCATS

Archer County

E. C. Norwood et al No. 1 W. P. Ferguson, sec. 4, F. Peterswick Sur. A-343. Spudded.

Baylor County

Hampton et al No. 1 A. G. Cochrell, sec. 2,404, T.E.&L. Sur. S.D.O. 1,385 ft.

Clay County

W. Gant No. 5 C. M. Worsham, D.L.&C.A. Sur. 1073. Tstg.

Healdton O. & G. Co. No. 1 Wallace, Belcher Subd. Drlg. 1,808 ft.

Cooke County

W. O. Russell No. 1 J. W. Sherrill, Wm. Phelps Sur. A-821. Drlg. 1,670 ft.

Denton County

W. C. Curry et al No. 1 G. F. Owens, N. Rudder Sur. A-1060. S.D.O. 620 ft.

Bruce Lee No. 1 Boyles, S. Ross Sur. A-112. S.D.O. 1,733 ft.

Scroggins et al No. 1 S. M. Freeman, Bradshaw Sur. A-104. S.D.O. 2,185 ft.

Wells-Dodson-Pearson No. 1 Hughes, B.B.B.&C. Sur. A-1252. S.D.O. 2,200 ft.

Foard County

Texas Co. No. 14 Johnson, sec. 37, S.P. R.R. Sur., Blk. L. Drlg. 1,860 ft.

Grayson County

Denver P. & R. No. 1 Cannon, A. Berry Sur. A-130. Will Lane perf. pipe and test upper sd.

Pearson Tubing Co. No. 1 J. H. Thompson, W. A. Warner Sur. A-1350. Drlg. 1,550 ft.

Jack County

Hanlon-Buchanan, Inc., No. 1 Ed M. Myers, N. F. Rudmose A-1803. Drlg. 600 ft.

Hanlon-Buchanan, Inc., No. 1-A E. R. and W. Worthington, S.A.&M.G. Sur. A-589. 6⅝-in. 2,350 ft.; O.S. 2,360-70 ft.; tstg.

Hattie B. Madden No. 1 J. L. Mask, T.E. &L. Sur., sec. 3708. S.D.O. 3,013 ft.

Riner & Kelleher No. 1 L. S. Wright et al, Z. S. Brooks Sur. A-64. Spd. and S.D.

Van Eman & Richards No. 1 Whitsell, Wm. McElroy Sur. A-559. S.D.O. 500 ft.

Montague County

J. W. Sorrell et al No. 1 J. E. Walthall, Sam H. Smith Sur. A-662. Drlg. 2,275 ft.

Wichita County

Grace & Woods No. 1 W. L. Hodges, H. B. Balch Sur. A-26. 6⅝-in. 3,720 ft.; R.U.S.

Hammon Hanlon Buchanan, Inc., No. 1 A. F. Fassett, sec. 1, E.T.R.R. Sur. O.S. 4,002-18 ft.; shot with 60 qts.; C.O.; est. 500 bbls.

Jack E. Kadane No. 1 C. A. Mangold, P. Castleman 35-A. 6⅝-in. cmtd. 3,650 ft.; O.S. 3,700-50 ft.; flwg. 100 B.P.H.

King Oil Co. No. 1 T. F. Mitchell, P. Castleman Sur. A-36. 6⅝-in. 3,640 ft.; W.O.C.

Lebus et al No. 1 G. W. Lewis, Blk. 20, K.W.V.L. Sur. 6⅝-in. 3,726 ft.; tstg. est. 750 bbls.

LeBus No. 1 J. F. Miller, W. R. Eaves Sur. A-447. Tstg. after 30-qt. shot.

Patterson et al No. 1 B. C. Ellis, J. Waldschmidt Sur. A-792. S.D.O. 1,300 ft.

Felix Payne No. 1 P. R. Pace, R. J. Scott Sur. A-253. Spud. & S.D.

E. J. Stump No. 1 M. P. Bishop, L. Netherley Sur. A-240. Drlg. 2,485 ft.

E. J. Stump et al No. 1 J. and J. Waggoner, W. R. Eaves Sur. A-753. Shot with 300 qts.; C.O.

Clyde Texan Oil Fields Co. No. 1 A. W. Burnside, John M. Sharp Sur. A-262. Shot S.L. 3,935-51 ft.; tstg.

Wilbarger County

Barry & Hayes No. 1 McGill, sec. 3, Blk. 9, H.&T.C. Sur. S.D. 3,030 ft.

W. Little No. 1 A. P. Morris, sec. 3, H.T. &C. Sur., Blk. 14. Drlg. 1,300 ft.

W. W. Woolsey et al No. 1 Waggoner A, sec. 3, S.P.R.R. Sur. A-535. Drlg. 1,040 ft.

Wise County

Latex Oil Co. No. 1 C. R. Smith, J. Couch Sur. A-104. C.O. bridge; tstg.

Young County

C. B. Christie No. 1 S. Dozier, I. L. Hill Sur. A-126. Drlg. 3,400 ft.

L. A. Long No. 1 F. A. Burnett, E.G. Rector Sur. No. A-239. W.O.C.

W-K Royalty Co. No. 1 J. A. Wright, J. N. Taylor Sur. A-1243. Drlg. 4,400 ft.

R. J. St. Germain, independent operator of Houston, Tex., has returned from an extended vacation trip through Minnesota.

Summary California Oil Field Operations for Sept., 1937

According to figures collected by the American Petroleum Institute, the total production of crude oil in California for September amounted to 20,553,578 bbls., an average of 685,184 bbls. per day. This is an increase of 11,762 bbls. per day over August production.

Total stocks of crude and all products in Pacific Coast territory increased during the month 549,781 bbls. The total stocks at the end of the month were 121,773,865 bbls. The total stock decrease for 1937, up to September 30, was 9,569,871 bbls.

One hundred wells were completed during the month with an initial daily production of 75,920 bbls., compared with 103 wells completed during August with an initial production of 37,966 bbls.

CRUDE PETROLEUM PRODUCTION

(Figures of production and stocks are in barrels of 42 gallons)

	Total production	Daily average		
Group No. 1:	September	Sept., 1937	Aug., 1937	Sept., 1936
Beiridge—North	488,865	16,296	15,758	12,738
Belriage—South	59,688	1,990	1,682	1,874
Coalinga	484,739	16,158	16,744	14,642
Edison	121,630	4,054	4,102	5,929
Elk Hills	332,082	11,069	10,505	8,323
Fruitvale	272,614	9,087	8,893	8,914
Greeley	54,716	1,824	1,737	.....
Kern River	468,164	15,605	15,894	13,767
Kettleman Middle dome	3,094	103	107	312
Kettleman North dome	2,414,986	80,500	78,423	77,630
Lost Hills	124,254	4,142	3,523	3,964
McKittrick	133,158	4,439	4,460	1,847
Midway-Sunset	2,232,065	74,402	74,761	59,219
Mountain View	550,900	18,363	17,449	23,228
Mount Poso	568,435	18,948	18,149	17,841
Round Mountain	413,860	13,795	13,473	11,665
Ten Section	97,909	3,263	3,081	759
Wheeler Ridge	9,541	318	320	342
Group No. 2:				
Capitan	88,224	2,941	2,886	1,641
Elwood	249,521	8,317	8,192	10,894
Rincon	97,537	3,251	3,249	2,149
San Miguelito	99,961	3,332	3,469	1,523
Santa Barbara	17,958	599	644	1,000
Santa Maria	384,580	12,819	14,432	5,304
Summerland	746	25	32	36
Ventura Avenue	1,048,060	34,935	34,805	33,683
Ventura-Newhall	153,522	5,117	5,308	4,926
Watsonville	1,800	60	60	60
Group No. 3:				
Brea-Olinda	184,190	6,140	6,098	7,837
Coyote—East	123,373	4,112	4,001	2,547
Coyote—West	214,941	7,165	7,130	8,021
Dominguez	899,834	29,994	29,097	25,149
El Segundo	380,645	12,688	11,247	419
Huntington Beach	1,081,438	36,048	35,656	36,122
Inglewood	479,440	15,981	15,755	12,691
Lawndale	2,308	77	78	113
Long Beach	1,778,523	59,824	57,957	67,583
Los Angeles-Salt Lake	16,974	566	566	867
Montebello	241,397	8,047	8,336	9,151
Playa Del Rey	235,423	7,847	7,939	11,839
Potrero	7,092	236	207	288
Richfield	263,569	8,786	8,824	6,449
Rosecrans	114,918	3,831	3,805	2,333
Santa Fe Springs	1,260,711	42,023	42,763	44,292
Seal Beach	278,867	9,296	9,507	9,579
Torrance	228,616	7,620	7,760	8,790
Whittier	27,377	913	902	890
Wilmington	1,763,333	58,778	53,656	.....
Total September	20,555,578	685,184	673,422	579,170
Total August	20,876,078	673,422	.....	.....
Increase	*320,500	11,762	.....	.....

*Decrease.

OIL FIELD DEVELOPMENT

	New rigs	Active drilling	Producers comp.	Daily initial output	Active producing	Abd. wells Drillers	Abd. wells Producers
Group No. 1:	up						
Beiridge—North	4	6	2	6,895	46	..	..
Belriage—South	...	...	...	.....	188	..	..
Coalinga	1	2	...	.....	897	..	4
Edison	3	3	1	100	91	..	..
Elk Hills	...	...	...	.....	178	..	..
Fruitvale	4	4	4	1,207	158	2	..
Greeley	2	5	1	3,489	6	..	..
Kern River	6	4	4	553	1,328	1	..
Kettleman Middle dome	...	1	...	.....	3	..	..
Kettleman North dome	..	12	2	3,322	166	..	..
Lost Hills	4	1	3	434	270	1	..
McKittrick	2	...	...	.....	208	..	..
Midway-Sunset	13	15	6	1,531	2,464	1	..
Mountain View	4	9	7	4,115	189	..	..
Mount Poso	13	10	4	1,181	262	3	..
Round Mountain	6	4	8	2,588	146	1	..
Ten Section	2	2	1	3,267	6	..	..
Wheeler Ridge	...	...	...	.....	25	..	..
Group No. 2:							
Capitan	...	...	1	37	36	..	..
Elwood	...	...	...	.....	83	2	..
Rincon	1	3	...	.....	35	..	..
San Miguelito	...	3	...	.....	13	..	..
Snt Barbara	...	...	...	.....	38	..	..
Santa Maria	8	14	8	7,151	260	..	..
Summerland	...	1	...	.....	19	..	..
Ventura Avenue	2	18	3	235	224	..	..
Ventura-Newhall	1	22	...	.....	573	..	..
Watsonville	...	...	...	.....	7	..	..
Group No. 3:							
Brea-Olinda	...	1	...	.....	371	..	..
Coyote—East	1	...	1	50	80	..	..
Coyote—West	...	1	...	.....	34	..	1
Dominguez	2	4	4	2,334	154	..	1
El Segundo	12	15	5	10,065	31	1	..
Huntington Beach	...	...	1	195	574	..	..
Inglewood	...	1	...	.....	196	..	..
Lawndale	...	...	...	.....	6	1	..
Long Beach	4	6	2	1,251	1,233	..	4
Los Angeles-Salt Lake	...	...	...	.....	113	..	..
Montebello	1	...	...	.....	206	..	..
Playa Del Rey	...	...	1	147	205	1	..
Potrero	...	1	...	.....	10	..	1
Richfield	3	5	...	.....	282	..	..
Rosecrans	1	4	1	359	80	..	..

Santa Fe Springs	...	2	...	....	657	..	..
Seal Beach	...	1	...	....	113	..	..
Torrance	...	3	2	71	535	..	..
Whittier	1	1	...	....	155	..	..
Wilmington	28	28	27	25,343	277	..	..
Miscellaneous drilling	14	42	...	.....	.....	13	..
Group No. 4—Gas fields:							
Buena Vista Lake	...	...	...	.....	.....	..	..
Buttonwillow	...	...	...	.....	.....	..	..
Chowchilla	...	...	...	.....	.....	..	..
Delano	...	...	...	.....	1	..	..
Dudley Ridge	...	...	...	.....	.....	..	..
Goleta	...	...	...	.....	1	..	..
McDonald Island	1	1	...	.....	4	..	..
Rio Vista	1	2	1	Gas	2	..	..
Semi-Tropic	...	1	...	.....	.....	..	..
Tracy	...	...	...	.....	6	..	..
Total September	145	248	100	75,920	13,245	27	10
Total August	108	247	103	37,966	13,074	31	20
Increase (*Decrease)	37	1	*3	37,954	171	*4	*10

Gulf Coast Water Shipments, September, 1937

Sabine District

Company, terminal—	Crude Coastwise	Crude Export	Refined Coastwise	Refined Export	Total
Atlantic P. L. Co.:					
Atreco	1,390,104	57,699	.....	.....	1,447,803
Continental Oil Co.:					
West Lake	78,699	.....	.....	.....	78,699
Fohs Oil Co.:					
Burtons	303,561	.....	.....	.....	303,561
Gulf Oil Corp.:					
Port Arthur	625,435	.....	3,361,683	199,809	4,186,927
Magnolia Pet. Co.:					
Beaumont	822,171	206,574	*2,157,874	.....	3,186,619
Lockport	71,058	.....	.....	.....	71,058
Pure Oil Co.:					
Smiths Bluff	.....	149,525	1,018,802	.....	1,168,327
Shell Pet. Corp.:					
Haymark	.....	183,550	.....	.....	183,550
Lockport	74,079	.....	.....	.....	74,079
Stanolind Crude Pur. Co.:					
Beaumont	.....	728,301	.....	.....	728,301
Sun Oil Co.:					
Beaumont	1,487,373	115,966	.....	.....	1,603,339
Texas Co.:					
Port Arthur	1,441,584	862,482	2,414,337	1,444,262	6,162,665
Union Sulphur Co.:					
Lockport	316,028	.....	.....	.....	316,028
Total	6,610,092	2,304,097	8,952,696	1,644,071	19,510,956

*Includes export.

Corpus Christi District

Amsco P. L. Co.:					
Corpus Christi	78,851	31,430	.....	.....	110,281
Atlantic P. L. Co.:					
Harbor Island	968,306	170,006	.....	.....	1,138,312
Corpus Christi Ref. Co.:					
Corpus Christi	.....	.....	166,685	.....	166,685
Crude Oil Mkt. & Trdg. Co.:					
Corpus Christi	133,719	203,095	.....	.....	336,814
General Amer. Terminal:					
Corpus Christi	.....	.....	84,679	60,233	144,912
Humble P. L. Co.:					
Harbor Island	2,442,816	.....	.....	.....	2,442,816
Ingleside	29,629	.....	.....	.....	29,629
Magnolia Pet. Corp.:					
Corpus Christi	163,204	.....	.....	.....	163,204
Republic P. L. Co.:					
Corpus Christi	.....	161,935	.....	.....	161,935
Southern Minerals Corp.:					
Corpus Christi	.....	204,244	.....	.....	204,244
Terminal Ref. Corp.:					
Corpus Christi	.....	.....	.....	112,069	112,069
Total	3,816,525	770,710	251,364	172,302	5,010,901

Rio Grande Valley District

Valley P. L. Co.:					
Port Isabel	.....	.....	132,376	41,829	174,205

Houston-Texas City District

Amer. Liberty P. L. Co.:					
Houston	279,936	222,831	.....	.....	502,767
Atlantic P. L. Co.:					
Texas City	250,617	.....	5,872	.....	256,489
Cities Service Oil Co.:					
Houston	73,247	.....	.....	.....	73,247
Eastern States Pet. Corp.:					
Houston	.....	.....	421,274	.....	421,274
Humble Oil & Ref. Co.:					
Baytown	146,259	74,737	3,240,924	1,326,453	4,788,373
Texas City	901,382	229,791	.....	.....	1,131,173
Independent Terminal Co.:					
Texas City	.....	.....	151,000	160,000	311,000
Republic Oil Ref. Co.:					
Texas City	.....	.....	167,000	149,938	316,938
Shell Pet. Corp.:					
Houston	.....	181,458	1,474,960	101,983	1,758,401
Sinclair Ref. Co.:					
Houston	1,274,396	.....	(*)	(*)	1,274,396
Texas Co.:					
Houston	125,391	.....	.....	.....	125,391
Tide Water Oil Co.:					
Houston	468,963	.....	.....	.....	468,963
Trans Pecos P. L. Co.:					
Houston	.....	31,708	.....	.....	31,708
Miscellaneous	.....	.....	3,041,628	1,360,519	4,402,147
Total	3,520,191	740,525	8,502,658	3,098,893	15,862,267

*Included in miscellaneous.

Mississippi District

Pan Amer. Pet. Corp.:					
Destrahan	.....	.....	70,100	.....	70,100
Shell Pet. Corp.:					
Norco	.....	.....	506,939	.....	506,939
Standard Oil Co. of La.:					
Anchorage	288,096	.....	.....	.....	288,096
Baton Rouge	401,678	.....	643,979	410,829	1,456,486
Texas Co.:					
Amesville	76,935	.....	.....	.....	76,935
Total	766,709	.....	1,221,018	410,829	2,398,556

Total All Districts

Sabine	6,610,092	2,304,097	8,952,696	1,644,071	19,510,956
Houston-Texas City	3,520,191	740,525	8,502,658	3,098,893	15,862,267
Corpus Christi	3,816,525	770,710	251,364	172,302	5,010,901
Mississippi	766,709	.....	1,221,018	410,829	2,398,556
Rio Grande Valley	.....	.....	132,376	41,829	174,205
Total	14,713,517	3,815,332	19,060,112	5,367,924	42,956,885

PANHANDLE COMPLETIONS

Carson County

Cities Service Co. No. 6 Magnolia "E," 3,045-95 feet, pumped 757 bbls. per day after shot.

Collingsworth County

M-E Oil Co. No. 1 Grogan, hole full of water 2,476-77 feet, dry and abandoned.

Gray County

Danciger Oil & Refining Co. No. 1 Garnflo, depth 3,504 feet, dry and abandoned. Cities Service Co. No. 5 Walberg, pumped 180 bbls., 3,010-52 feet. Drilling & Exploration Co. No. 6 Leopold, 3,240-3,302 feet, pumped 370 bbls. daily. Gray County Production Co. No. 3 Chapman, 2,685-2,740 feet, 1,180 bbls. on gas-lift. Kewanee Oil & Gas Co. No. 6 McKinney, 3,180-3,290 feet, pumped 607 bbls. per day. King Oil Co. No. 3 Baer "AA," 3,225-80 feet, 368 bbls. on pump after shot. Magnolia Petroleum Co. No. 3 Saunders, 2,765-90 feet, pumped 36 bbls. per day. Morgan Drilling Co. No. 1 E. Wasborn, 2,565-2,670 feet, 7,500,000 feet of gas. Ochiltree and others No. 1 Baggerman, 3,267-80 feet, 204 bbls. per day by pumping after shot.

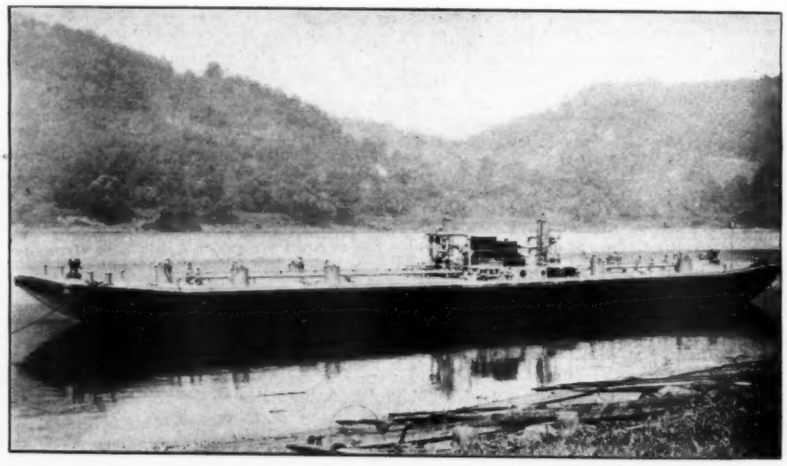
Sinclair-Prairie Oil Co. No. 2 Pope, 3,127-43 feet, pumped 225 bbls. per day. Southern Petroleum Exploration Co. No. 9 Vaughn, 3,180-3,230 feet, 761 bbls. per day on pump. Stanolind Oil & Gas Co. No. 6 Kinzer, 3,275-3,306 feet, 311 bbls. by pumping. Taylor Oil Co. No. 1 Taylor "B," 2,935-75 feet, 110 bbls. daily by pumping.

Hutchinson County

Stanolind Oil & Gas Co. No. 7 Halle "B," 3,020-57 feet, pumped 345 bbls. daily; No. 12 Ware "C," 2,940-95 feet, 515 bbls. per day by pumping.

Steel Barge to Transport Gasoline and Kerosene on Upper Ohio River

All welded steel barge built by American Bridge Co. for Standard Oil Co. of Ohio, for upper Ohio River transportation of gasoline and kerosene. The barge measures 145 feet by 26 feet by 7 feet 4 inches. It is of 150,000 gallons capacity, on a draft of 5 feet 10 inches, is divided into eight compartments for transportation of petroleum products, and has a rake compartment at each end for flotation purposes only. A double piping system is installed with 4-inch lines to four kerosene compartments and 6-inch lines to the same four compartments as well as to the remaining four gasoline compartments. Each line is equipped with diesel pumps.



MARKET RECORD, ACTIVE OIL STOCKS

Compiled by Carl H. Pforzheimer & Co., 25 Broad Street, New York City, Member New York Stock Exchange and New York Curbe Exchange

New York Stock Exchange

1937 High	1937 Low	Week ending Nov. 13 Sales	Week ending Nov. 13 High	Week ending Nov. 13 Low	Week ending Nov. 13 Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1936	1936 High	1936 Low	1935 High	1935 Low
114⅞	57½	7,100	64	57½	63	Amerada Corp.	788,675	N.P.	50cQ	10-30-37	$2.00	125½	75	80	48½
37	18	5,700	23¾	21½	23⅜	Atlantic Refining	2,664,000	$25	25cQ	12-15-37	1.25	35⅛	26⅝	28	20½
43⅜	10⅛	7,600	18⅞	15	18½	Barber Co.	387,149	$10	75c	12-16-37	.50	38½	21	22½	11¾
35¼	10	12,900	15⅞	13¾	15½	Barnsdall Oil Co.	2,247,974	$5	25cQ	11-1-37	.80	28¼	14⅛	14⅜	5⅞
20⅞	4⅝	109,100	11	8	10⅝	Columbia Gas & Elec.	11,610,036	N.P.	20c	5-15-37	.40	23⅜	14	15⅜	3⅜
17⅞	7	19,800	10⅝	9½	10	Consolidated Oil Corp.	13,919,417	N.P.	20cQ	11-15-37	.80	17¼	11½	12¼	6½
49	24	13,400	33	29½	31½	Continental Oil of Delaware	4,682,615	$5	50cQ†	9-30-37	1.50	44⅞	28⅛	35	15⅛
17⅝	4⅜	10,900	8⅝	7¼	8⅛	Houston Oil (new)	1,098,618	$25	....	10-17-30	....	13⅞	6⅝	7	1½
35⅜	14	4,000	21½	19½	20½	Mid-Continent Petroleum	1,855,912	$10	$1	21-1-37	1.15	30⅞	17¼	20½	9½
34	16⅛	900	19	17	18½	Mission Corporation	1,399,345	N.P.	$1	6-15-37	.45	29⅞	16¾	17¾	10⅜
26¼	21⅛	13,500	26¼	21½	24¾	National Supply	382,591	$25	$2 pf.‡	12-22-37	....	75½	19⅞	20⅞	9
22⅞	9	20,100	13⅝	12½	12⅞	Ohio Oil Co.	6,563,377	N.P.	50cSA	12-15-37	.60	18	12⅛	14¼	9¼
29¾	12⅛	900	15	13½	14½	Pacific Western Oil	1,000,000	N.P.	65c	12-18-36	.65	23½	11⅜	14	6⅜
4½	1	1,200	1⅜	1¼	1⅜	Panhandle P. & R.	198,770	N.P.	....	.....	....	4¼	1⅜	1⅞	½
64	30⅛	18,000	45⅜	39¼	44¼	Phillips Petroleum	4,449,052	N.P.	75cQ†	12-1-37	2.50	52⅝	38⅛	40	13⅜
29⅞	13	2,700	19	17⅛	18½	Plymouth Oil Co.	1,050,000	$5	35cQ	9-30-37	.90	27⅜	11⅞	13	6½
21⅜	8¾	26,200	13⅝	12⅛	13¼	Pure Oil Co.	3,281,120	N.P.	....	9-1-30	....	24⅞	16	17	5⅞
54⅛	16	5,400	23¾	20¼	23½	Seaboard Oil of Delaware	1,224,283	N.P.	25cQ	9-15-37	1.00	44	30½	36⅞	20¾
34⅜	15½	7,000	18¼	16⅝	17¾	Shell Union Oil	13,070,625	N.P.	50c	7-15-37	.25	28¼	14¾	16½	5½
105⅜	94½	300	98	94½	98	Shell Union Oil 5½% pfd.	343,500	$100	$1.37½Q	10-1-37	28.87½	127½	102	111	63⅛
4¼	3	400	2½	2½	2½	Simms Petroleum	461,698	$10	75c liq.	11-3-37	2.25 liq.	6¾	3½	18¾	4¾
60⅝	28¼	3,400	35⅜	31½	34¾	Skelly Oil	1,006,348	$15	50c	9-30-37	....	47⅜	19½	20½	6½
23¼	13	49,000	16⅞	15	16⅝	Socony-Vacuum	31,151,071	$15	30c	12-15-37	.70	17½	12½	15⅜	10⅝
50	28	22,200	32⅞	30⅜	31½	Standard Oil of California	13,014,754	N.P.	80cQ†	12-15-37	1.20	47⅝	35	41⅛	27⅜
50	26½	14,800	35	33⅛	34½	Standard Oil (Indiana)	15,196,241	$25	$1Q†	12-15-37	2.40	48½	32¾	33⅜	23
50	30⅝	No sales	..	..	..	Standard Oil of Kansas	134,841	$10	$1	12-26-36	1.00	31	25	32	20
76	42½	37,800	50½	47⅜	49⅞	Standard Oil of New Jersey	25,856,081	$25	$1.25SA†	12-15-37	2.00	70⅜	51⅛	52⅜	35¾
77½	54	900	59½	55	59½	Sun Oil	2,156,825	N.P.	25cQ	9-15-37	$1 & 6% Stk.	91	70	77	60½
65⅛	34¾	44,400	44⅜	39	43	Texas Corp.	10,896,858	$25	50cQ	10-1-37	1.50	55¼	28⅞	30¼	16½
9⅝	2	5,700	4⅜	3⅞	4¼	Texas Gulf Producing Co.	888,132	N.P.	10c	12-23-37	.05	8⅞	4⅜	4¾	2½
16⅝	5⅜	7,800	9½	8	9⅛	Texas Pacific Coal & Oil	888,237	$10	10c	12-1-37	.25	15¼	7½	9¼	3¼
21⅝	13⅛	13,800	15½	14⅜	15½	Tide Water Associated	6,288,512	N.P.	35cQ†	9-1-37	.70	21¾	14¾	15⅞	7⅝
28¼	17½	4,800	21⅜	19⅜	21¼	Union Oil of California	4,386,070	$25	55cQ†	11-10-37	1.00	28½	20¾	24	14⅜
31½	22½	600	23⅝	22¾	23⅝	Union Tank Car Co.	1,200,000	N.P.	40cQ	12-1-37	1.20	31⅝	22⅝	26½	20⅞
6¼	1¾	5,700	2⅝	2½	2¼	Wilcox Oil & Gas	424,839	$5	....	5-10-28	....	5¼	2¾	3⅛	1

*Ex-dividend. †Includes extras. ‡One-tenth share $2 preferred stock.

New York Curb Exchange

1937 High	1937 Low	Week ending Nov. 13 Sales	Week ending Nov. 13 High	Week ending Nov. 13 Low	Week ending Nov. 13 Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1936	1936 High	1936 Low	1935 High	1935 Low
21⅜	7	1,400	11½	10⅝	11½	Bridgeport Machine Co.	260,000	N.P.	25c	9-30-37	$1.00	21	13¼	14⅛	3¾
51½	42	200	42	42	42	Buckeye Pipe Line Co.	200,000	$50	75cQ	12-15-37	3.25	50	39¾	42½	30½
2¾	¾	6,200	1⅜	1	1¼	Carib Syndicate	799,020	25c	....	.....	....	4⅞	1⅞	4¼	1⅝
123	95½	250	98	96	98	Chesebrough Mfg. Co.	120,000	$25	$1.50Q†	9-30-37	7.00	124¾	105	157	115
5⅜	1½	5,200	2½	1⅞	2⅜	Cities Service	37,804,394	N.P.	....	6-1-32	....	7⅜	3	3¼	¾
5½	1½	1,800	2⅝	2½	2⅝	Cosden Petroleum	399,687	$1	....	.....	....	4½	1½	1½	¼
38¾	20¼	7,500	26½	23¾	26	Creole Petroleum	6,974,356	$5	50cSA†	12-15-37	.50	39	19⅞	23¾	10
18⅝	6½	500	8⅜	8	8⅜	Darby Petroleum	351,390	$5	25cSA	1-15-38	.50	18⅛	9	8⅞	4
8⅜	2¼	500	4½	4¼	4½	Derby Oil & Refining	263,162	N.P.	....	.....	....	6¾	1⅞	2	⅝
47½	24½	No sales	..	..	..	Eureka Pipe Line	50,000	$50	$1Q	11-1-37	4.00	47½	38½	38	33¼
63½	33	8,400	42	38⅞	40½	Gulf Oil Corp.	9,076,202	$25	25cQ	10-1-37	1.50, 100% Stk.	59	36	74¾	50¼
87	55	6,200	63	57⅛	61½	Humble Oil & Refining	8,923,935	N.P.	62½cQ	10-1-37	1.50	80	57	64	44
24¼	14½	2,700	18½	17½	18½	Imperial Oil of Canada	26,919,871	N.P.	62½cSA†‡	12-1-37	1.25	24½	19¾	22½	15⅝
15	5⅞	400	8	7¾	8	Indiana Pipe Line	300,000	$10	50cSA	11-15-37	.80	9¾	5½	6⅛	3⅝
39½	23½	5,300	31	29½	30	International Petroleum	14,247,088	N.P.	$1.25†‡	12-1-37	2.50	39⅝	32⅝	39¾	28
15¼	7	7,000	8¾	7⅝	8⅜	Louisiana Land & Exp.	3,000,000	N.P.	10cQ	9-15-37	.50	15⅜	9⅞	11⅜	4⅜
34	12½	2,800	20½	18	20⅛	Lion Oil Refining	270,000	N.P.	25cQ	10-20-37	.75	17¾	7⅜	8⅛	3½
14¼	5¼	2,700	8⅜	7½	8⅜	Lone Star Gas	5,382,723	N.P.	20c	12-22-37	.60	14¼	9⅞	10⅞	4½
14⅝	6¼	600	8	7¾	8	Midwest Oil Co.	998,444	$10	50c	12-15-37	....	....	....	..	..
7⅞	4⅛	1,200	5¼	5	5⅛	Mountain Producers	1,682,182	$10	30cSA	12-15-37	.60	8⅜	5	5⅜	4⅛
19½	12	1,800	13½	13	13¼	National Fuel Gas	3,810,183	N.P.	25cQ	10-15-37	1.00	23	17⅜	20	11¾
12½	7¼	400	8¾	8⅜	8½	National Transit	509,000	$12.50	45cSA	6-15-37	.75	15¾	9¼	10⅝	6¾
6⅛	4¼	No sales	..	..	..	New Bradford Oil	1,445,202	$5	18c	9-17-37	.10	4⅝	2⅞	3¼	2
5	1⅛	300	1½	1⅜	1½	New Mexico and Arizona	1,000,000	$1	1c	12-1-36	.01	6⅝	1⅝	2½	1
5⅜	4	No sales	..	..	..	New York Transit	100,000	$5	25cSA	10-15-37	.35	6¼	4¼	4⅞	3
12¾	5⅜	No sales	..	..	..	Northern Pipe Line	120,000	$10	25cSA	12-1-37	.40	9¾	4⅞	8	5¼
9⅝	2¾	30,400	5¾	4⅜	5⅝	Pantepec Oil	1,608,700	N.P.	....	.....	....	10⅛	3¼	4⅜	1¼
13¾	2	1,300	3¼	3	3⅜	Root Petroleum Co.	336,045	$1	25c	2-1-37	.50	19¼	4½	5	1½
6½	2¼	100	3⅛	3⅛	3⅛	Ryan Consolidated	296,931	N.P.	....	.....	....	4¾	1⅞	2½	⅝
56	35	1,200	38	37½	38	South Penn Oil	1,000,000	$25	$1.15Q†	9-30-37	2.60	44	32½	34½	21⅝
7¼	3⅞	No sales	..	..	..	Southern Pipe Line	100,000	$10	25cSA	9-1-37	.25	7⅞	3¼	5	3⅞
42	20⅝	No sales	..	..	..	South West Penna. Pine Lines	35,000	$50	50cQ	10-1-37	13.00	60	44	56	44¼
21⅛	14¾	2,100	17⅞	17	17½	Standard Oil of Kentucky	2,604,790	$10	40cQ†	9-15-37	1.35	23⅜	17⅛	24	18
11⅜	8	200	8¾	8¾	8¾	Standard Oil of Nebraska	188,403	$25	25c	3-29-37	.25	14⅝	11	12	7¾
45	16	600	25¾	25¼	25⅜	Standard Oil of Ohio	753,740	$25	25cQ	9-15-37	2.00	40	21¾	23⅝	11½
4⅞	2	6,500	3¼	3	3	Sunray Oil	1,910,119	$1	10c	12-24-37	.10	5	2⅝	2⅞	⅞
7⅝	2	400	4½	4¼	4½	Texon Oil & Land	336,028	$2	15cQ	9-3-37	.60	9¾	5⅜	6⅞	5

*Ex-dividend. †Includes extras. ‡Payable in Canadian funds.

Note—In comparing highs and lows for the several years in the two tables, it will be necessary to take into consideration cases where there have been stock split-ups

PERSONAL

W. P. Z. GERMAN, chief counsel for the Skelly Oil Company, Tulsa, accompanied by MRS. GERMAN, left last Saturday for a trip to Madison, Wis.

JOHN M. LOVEJOY, president of the Seaboard Oil Company of Delaware, received the degree of doctor of science last week from Colby College, Waterville, Me. The citation was as follows: "Fit representative of a great industry; graduating in engineering at the Columbia School of Mines; serving his country in France as captain of field artillery; and advancing his profession as president of the American Institute of Mining and Metallurgical Engineers; always an inspiring leader and able executive, winning success with sound engineering and sane economics."

MISS MAUDE OWNBY, of the U. S. Geological Survey, has been transferred from the Roswell, N. M., office to the Tulsa office.

T. L. HOOPER, W. A. GLENN and GEORGE DAVIS, all of Seminole, Okla., have formed the United Royalties Corporation, Inc., Seminole, and have obtained a domestic charter.

J. H. LOUDON, of the Royal Dutch-Shell group, has returned to The Hague, following a tour of producing fields in California, Texas and Venezuela during the past two years.

PAUL E. KUHL and A. C. PATTERSON, of the Standard Oil Development Company, New York, are spending part of this week in Galveston, Texas City and other Gulf Coast points.

R. O. TAYLOR, of the department of industrial relations at the Casper, Wyo., refinery of the Standard Oil Company (Indiana), has been appointed Rocky Mountain division chairman of the petroleum section of the National Safety Council.

ROLAND De FORD, geologist for the Argo Oil Corporation at Midland, Tex., and recently returned from a tour of Europe including Russia, as a delegate to the International Geological Congress, will be the principal speaker at the first fall dinner meeting of the Fort Worth Geological Society.

VICTOR M. LOCKE, JR., has been elected president of the Farmers' Mutual Royalty Syndicate, Inc., Oklahoma City, Okla., following a reorganization in which M. E. Trapp and G. T. Blankenship retired to devote their time to personal business. The company plans to become active in development of leases and production of oil on holdings in Oklahoma and Texas.

CALVIN GILMORE, son of EARL GILMORE, president of the Gilmore Oil Company, has completed a period of roustabouting in California's Mountain View field and has taken a position as engineer for the Gilmore marketing department in Oregon. He is a recent graduate of Stanford University.

JAMES R. LEWIS, L. L. HOLLANDSWORTH, SAMUEL C. GIBSON and L. D. HUTCHINSON have joined the Federal Petroleum Agency in Kilgore for service as examiners in the East Texas field. Mr. Lewis, formerly an examiner in East Texas, was transferred from Houston. TOM R. RAYBURN has been assigned to the agency's accounting department.

ROY MORGAN, in charge of Cane Creek Oil Company's wildcat test in Grand County of southeastern Utah, has been on a business trip to Bakersfield, Calif.

R. C. BOWLES, a scout in the geological department of the Tide Water Associated Oil Company in Tulsa, has been transferred to San Antonio and will cover the Southwest Texas district.

J. C. HUNTER of Abilene, Tex., president of the West Central Texas Oil and Gas Association, has announced that the annual meeting of this organization will be held at Abilene on Saturday, December 4.

C. S. EVANS has been appointed geologist of the natural gas division by the Union Gas Company of Canada, Ltd. Mr. Evans recently resigned from the Department of Mines and Resources of Ottawa in order to take the post.

Do You Remember?

From The Oil and Gas Journal Files

25 YEARS AGO

David White is appointed chief of the U. S. Geological Survey, succeeding Waldemar Lindegren, who will be Rogers professor of geology in Massachusetts Institute of Technology.

Former Congressman Beeman G. Dawes, of Marietta, Ohio, president of the Vivian Oil Company, is looking over his oil and gas interests in Louisiana.

Thomas W. Shepherd, pioneer Texas oil operator, dies in Beaumont, Tex.

James Murphy, son of Michael Murphy, president of Pure Oil Company, was killed in an automobile accident at Vincennes, Ind.

20 YEARS AGO

Empire Pipe Line Company has finished the construction of a 350,000-barrel concrete tank at its Gainesville, Tex., refinery and will build two more.

Tulsa citizens receive abusive letters from I.W.W. members. Some threaten to blow Tulsa higher than Gilderoy's kite. Tulsa home guards are on the alert.

A. C. Bedford has been made chairman of the board and chief executive officer of the Standard Oil Company of New Jersey, and Walter C. Teagle president. Mr. Teagle is 39 years old.

10 YEARS AGO

In the third quarter of 1927, Carter Oil Company led in gross production in Oklahoma with 4,932,228.96 barrels, valued at $6,435,703.83. Prairie Oil & Gas Company was second with 4,264,218.43 barrels, valued at $5,672,603.86. In Texas, Gulf Production Company led with 5,593,842.97 barrels, valued at $5,581,868.34; Magnolia Petroleum Company was second with 2,843,208.80 barrels, valued at $3,001,384.76.

Texas division of the Mid-Continent Oil and Gas Association is formed with John F. O'Donohoe, of Wichita Falls, president.

The Belmont Quadrangle Drilling Company will drill a 5,500-foot hole in the Allegany field in New York, to test for oil or gas below the known sands in the field.

V. E. COTTINGHAM, chief engineer for the petroleum division of the Texas Railroad Commission, spent several days in Houston the past week, visiting fields in that area.

HARUKICHI TAKAHASHI, petroleum engineer for the Formosan government in Taihoku, Japan, is spending several days in the Gulf Coast district visiting important fields in the Texas and Louisiana areas.

JOHN DIERINGER, independent operator of San Angelo, Tex., has returned from a motor trip to eastern points including his old home in West Alexander, near Pittsburgh, Pa. He was accompanied by MRS. DIERINGER.

GEORGE VINES, engineer-superintendent for Creditul Minier Company, of Ploesti, Rumania, spent several days in Oklahoma City field before starting back home, after visiting fields in Colorado, Texas and Oklahoma.

JOE TURNER, scout and land man for the Continental Oil Company in the Corpus Christi, Tex., office, has been transferred to Houston, and will be replaced in Corpus Christi by "SPUD" BURSON, of San Antonio and Houston.

G. R. BRYANT, R. J. DEARBORN, K. G. MacKENZIE, F. W. HALL, C. W. WATSON and V. STAPLETON were among New York representatives of the Texas Company who left last week-end for Galveston, Tex., to attend a cracking development conference.

A. B. BOWIE and F. M. WOODWARD, members of the Union Oil Company's production department, with headquarters in Santa Fe Springs, recently completed 30 years of continuous service, in recognition of which they were presented with diamond-studded service pins.

PARAGRAPHS

T. J. (TONY) LATINIS, for the past three and one-half years land and geological scout in the Texas Panhandle for Phillips Petroleum Company, has been promoted and transferred to western Kansas headquarters at Great Bend. M. F. DERINGTON, who has been in the land office at Amarillo, Tex., will replace him.

DR. BLAINE B. WESCOTT, in charge of production chemistry and materials research section of the Gulf Research & Development Corporation, Pittsburgh, Pa., was the speaker Tuesday evening of this week at the meeting of the Mid-Continent section, American Society of Mechanical Engineers, in Tulsa. His subject was "Fatigue and Corrosion Fatigue," and he discussed recent investigations into the nature of fatigue and corrosion fatigue, with special reference to their effect on oil-field equipment. Doctor Wescott is chairman of the A.P.I. central committee on production and drilling practice.

W. B. PLUMMER and J. K. ROBERTS, of the Standard Oil Company of Indiana, left Chicago last week for a business trip to points in Texas.

E. H. FINCH, geologist of San Antonio, Tex., sailed from New York en route to Angola, West Africa, where he will do geological work for one of the West African companies.

W. F. MOORE, president of the Process Management Company, returned to the New York offices of the company November 11 after spending several weeks in Europe.

CHARLES BEDFORD, assistant general superintendent for the Stanolind Oil & Gas Company in Houston, Tex., has returned to his desk after a vacation trip to Mexico City.

H. D. MISER, geologist in charge of the division of oil, gas and coal deposits for the U. S. Geological Survey, Washington, D. C., is making a tour of Mid-Continent oil and gas fields.

JOHN WILEY, assistant to the chief scout for the Shell Petroleum Corporation in Houston, Tex., has been promoted to scout and transferred to the Kilgore district. He is being replaced in Houston by HOWARD HOOPER.

CAPTAIN J. A. GOODWIN, managing director of Trinidad Consolidated Oilfields, is in England to consult his board with regard to development plans of his company. He planned to remain several weeks before returning to Trinidad.

FREDERICK S. FALES, New York, vice president of the Socony-Vacuum Oil Company, Inc., is reported recovering after undergoing an appendectomy. He was stricken with acute appendicitis November 6 and was operated on at the Dickinson Hospital in Northampton, Mass.

MAX WATSON, assistant general superintendent of the Canadian River Gas Company, attended the meeting of the general committee of the southwestern gas measurement short course which was held in Dallas.

ARTHUR E. POTTER, appointed general credit manager of the Richfield Oil Corporation, Los Angeles, Calif., joined the Rio Grande Oil Company as general credit manager in 1926 and held that position continuously until his recent affiliation with Richfield. Born in Boston, he went 30 years ago to Los Angeles, where he attended the public schools, studied law and for a time served in the legal department of the Los Angeles board of trade.

DR. VLADIMIR N. IPATIEFF, Chicago, internationally known chemist and authority on catalytic reactions, will be honored by the Chicago section of the American Chemical Society Friday, November 26, when a special meeting will be held to celebrate his seventieth birthday.

E. M. CLINE, scout for the Shell Petroleum Corporation, with headquarters in Big Spring, Tex., has been transferred to the Houston office, replacing J. M. ROBERTS, transferred to the Corpus Christi district. Mr. Roberts succeeds PAUL HINYARD, who goes to San Antonio. L. B. BERRY, scout at Big Spring, has been transferred to Hobbs, N. M. He will be replaced by BEN H. (DICKINSON) BLAND, formerly stationed in Kilgore.

All Five in Oil Business

T. J. McMahon, vice president of the Texas Pipe Line Company, in charge of crude purchasing and transportation, is one of five brothers, all well known in the oil business, and his father, D. J. McMahon, was in the service of the National Transit Company 30 years. After schooldays in Karns City, Pa., where he was born, Mr. McMahon at 17 got a job with the Southwest Pennsylvania Pipe Line Company (National Transit subsidiary), working out of Pittsburgh, Pa. First he was an engineer and gauger, then field gauger.

T. J. McMAHON

For years the young man, stirred by reports of bigger pay and greater activity, had wanted to go West, as his brothers already had done. So in 1908 when he was offered the job of chief oil dispatcher for the Texas Company in Houston, Tex., he seized it. At that time the Texas was a single company, with production, refining and pipe line departments. The Texas Pipe Line Company was formed in 1917. Steady advancement in that organization carried Mr. McMahon to more important positions until in 1927 he was elected to his present responsible post.

Mr. McMahon is a skilled telegraph operator, having become adept with the key when he was with the Southwest Pennsylvania. In those days almost every man engaged in pipe line gauging or field work had to be a telegrapher. He has resided in Houston continuously since 1908. When he joined the Texas its one pipe line ran from Oklahoma to Houston and thence to Port Arthur. The system now is one of the largest in the industry.

C. C. HALL, vice president of the First National Bank of Houston, Tex., left last week for a three-week trip to Mexico City.

Z. C. TATTON, sales superintendent of the Texas Company, with offices in Wellington, New Zealand, spent several days in Los Angeles recently.

PAT R. RUTHERFORD, president of the Rutherford Drilling Company, Houston, Tex., is spending several days in New York after attending the A.P.I. convention in Chicago.

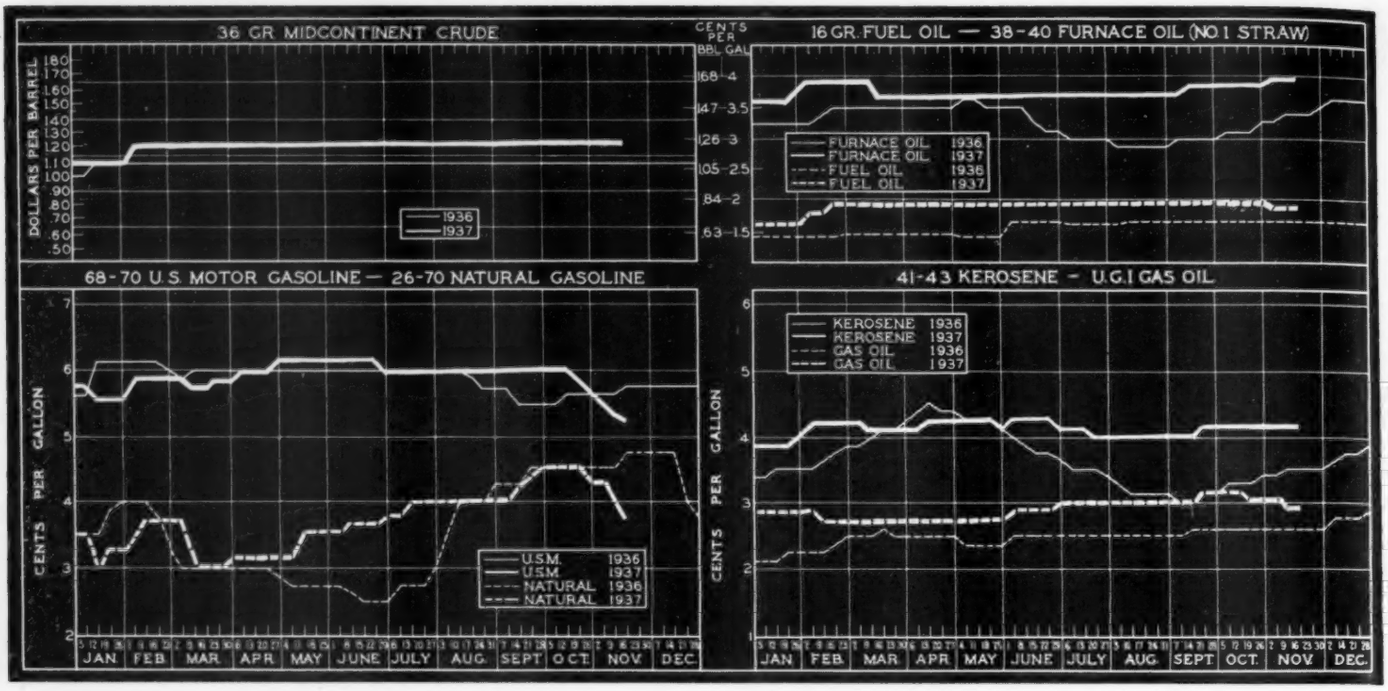
NEWTON T. RASS, L. H. GOODKNIGHT and K. J. FARRELL, California independent producers, have organized a new operating company, the Federal Drilling Company, with offices in Long Beach.

T. S. COX, district geologist with the Plymouth Oil Company, Texon, Tex., has announced he will resign his position December 1 to become a geological consultant. His headquarters will be in San Angelo, Tex.

M. T. SMITH, with the Shell Petroleum Corporation in Houston, Tex., has been transferred to the West Texas and New Mexico district, where he will be in charge of the crude oil purchasing department.

D. G. WHITE of the Union Oil Company of California, Los Angeles, has been appointed property representative of the southern region, and T. W. NELSON has been appointed to a similar position in the northern region.

I. N. CLAY, Casper, Wyo., secretary-treasurer of the Wyoming-Southern Oil Company, was expected back in Casper soon from St. Luke's Hospital in Denver, Colo., where he has been receiving treatment for a fractured arm and other injuries suffered in an automobile accident in Casper.



Representative Mid-Continent Quotations on Crude Oil and Refined Products, Basis Oklahoma (Group 3)

Group 3 Gasoline Market Steadier as Refiners Refuse to Meet Price Cut

By T. F. SMILEY

Something more substantial than hopeful prediction was observable in the Group 3 area this week in support of opinions that tankcar gasoline prices at last had reached their low. It was the refusal of a growing body of refiners to meet further price-cutting.

An assertion falling on the ears of sales managers with painful frequency in recent weeks has been, "I can get it for an eighth less than that." And the sales manager, watching the line on his gasoline price-graph falling rapidly southward and confronted by the necessity of keeping his inventory down, often responded, "Well, we don't let an eighth stand in the way."

Couldn't Quibble Over Prices

In some cases a small refiner with distress material on his hands and in immediate need of cash to pay a bill for crude, has been in no position to quibble over prices. So every few days witnessed a further crumbling of tankcar quotations until the 6 cents which ruled in mid-October for high-octane gasoline had shrunk to 5¼ cents.

In the past week, however, one refiner after another, facing the alternatives of either getting more for his gasoline or shutting down his plant, dropped his submissive mien and on hearing the familiar "I can get it for an eighth less," rejoined, "Well you'd better get it."

This had a distinctly stiffening effect on the market. The buyer in some cases capitulated. In others he shopped around, only to meet the same sort of replies everywhere. The air has been cleared enough in the past week to make it fairly plain that only a few small refiners now can be persuaded to make concessions, and their output falls so far short of supplying spot market needs that it no longer can drag quotations to lower levels.

Plant shutdowns and curtailment of runs to stills are exercising a stabilizing influence. The Wilcox refinery in Bristow, Okla., is among the latest of the important plants to join the inactive list. Refiners are a unit, however, in declaring that the mildly favorable developments of the past week or so are not enough to place the gasoline market on a sound foundation. Either the cost of manufacture must be lower or the price received for the product must be higher. To avoid refinery losses without general shutdowns and without a lower price for crude more drastic reductions in runs to stills evidently will have to be made.

Refined Oil Market Barometer

Sharper temperatures are bringing out numerous delivery instructions on heating oils, adding a still firmer tone to that division of the market, which now is leading the entire list. Gasoline which has been sinking to new lows, is believed to have reached bottom. Heavy residual fuels and lubricants continue dull. Natural gasoline off, in sympathy with the refinery product.

MID-CONTINENT. Gasoline slightly firmer. Heating oils vigorous. Naturals off.

EAST COAST. Light fuel oils and kerosene stronger. Gasoline unsteady.

GULF COAST. Kerosene inactive. Gasoline weak. Fuel oils strong.

CALIFORNIA. Aviation gasoline strong. Kerosene, diesel and gas oils firm.

PENNSYLVANIA. Higher octane gasoline, kerosene strong. Lubricants weak.

CHICAGO. Gasoline steadier. Kerosene and light fuels firm. Heavy fuels soft.

Naturals Give Ground

Following the course of the refinery product, natural gasoline lost a fourth in Oklahoma and an eighth in Texas. Although contract movement was of substantial volume and refiners and jobbers were making moderate spot purchases, field stocks of small manufacturers continued to grow, with the result that quotations gave ground. Manufacturers confess their inability to forecast the future of the market, but they look upon the apparent leveling off of refinery prices as a hopeful sign. Orders for two part cargoes for export shipment were placed in the past week, and a cargo inquiry is in the market.

The furnace oils were firm, with No. 1 prime white and No. 1 straw leading the group in point of tightness and scarcity. Kerosene was sharing in the brisk demand for heating oils, and the 40-42 tractor fuel was reported increasingly hard to find. This grade of tractor fuel is used as a range oil in many homes. The trade is witnessing the spectacle of low-octane gasoline, 41-43 kerosene, 40-42 tractor fuel and prime-white distillate quoted at almost identical figures. Heavy industrial fuels were soft.

U.G.I. gas oil, influenced by the sluggishness of low-grade burning oils, as well as by tapering demand, lacked vigor. In the present easy gasoline market refiners are buying less gas oil than usual for cracking purposes. The lubricant group continued lifeless, with prices unchanged. Inquiries for wax were light, but prices were unchanged.

Gasoline Market Continues Decline on East Coast but Fuel Oils Improve

By H. STANLEY NORMAN

NEW YORK, Nov. 15.—Decline of the gasoline market in the North Atlantic and Middle Atlantic states continued last week. On November 15 Standard Oil Co. of New Jersey lowered consumer tankcar and dealer motor fuel prices three-quarters of a cent per gallon generally throughout the company's marketing territory. Exceptions were made at points previously subnormal, including Washington, D. C., and vicinity where previous prices are unchanged.

The company explained its adjustment by pointing to reductions in the basic gasoline markets and to the softening of tank steamer charters from the Gulf Coast to North Atlantic points.

October business in fuel oil and kerosene was heavier than some had expected due to almost the entire month requiring some heating for comfort. The strength in light fuel oils and gas oil extended to the Gulf Coast where one supplier reported he had been offered 4¾ cents per gallon for a cargo of No. 2 fuel. Gas oil demand from foreign purchasers continues active giving this product top spot on the Gulf Coast market. Prices most frequently heard for gas oil and light fuel oil ranged from 4½ to 4⅝ cents per gallon, but little material was offered on the market at any price giving credence to the report that 4¾ cents had been bid. With supplies apparently limited, and colder weather gradually developing it would not surprise close observers to see 4¾ cents per gallon established as the ruling price on the Gulf Coast before another week passes.

In contrast to interest in light fuel oils, Gulf Coast gasoline conditions are unsatisfactory from a standpoint of active buying. The inquiry from a French buyer reported a week ago has not developed a sale although several refiners were said to have entered bids. It was considered likely that any potential business for December is being held in abeyance as long as possible to give traders any advantage of a lower trend.

There remains considerable movement of both diesel fuel oil and Bunker C material from the Gulf and North Atlantic coasts for the Far East, but is mostly confined to shipments by American companies to foreign marketing subsidiaries. In view of the character of the business, it is reflected only indirectly in the domestic market and in a way that is not immediately felt. Kerosene and light fuel oils also set the market pace in western Pennsylvania, but several grades of cylinder stock drifted into still lower ground. The 600 steam refined filterable cylinder material was holding fairly firm at the preceding week's quotations. Buying was reported more active in this particular grade. The more viscous and higher flash cylinder oils were weak, however, and generally sold from one-half to a full cent below the preceding week's quotations with sluggish turnover.

Tankcar gasoline of 65 octane at Pennsylvania refineries continued to sell at about 7¼ cents per gallon, but demand to the west was slackening off because of competitive material reaching overlapping territory out of Michigan and Kentucky.

The tanker charter market skidded to a new 1937 low last week when a boat was reported chartered for movement of a cargo of light fuel oil to north of Cape Hatteras for 25 cents per barrel. The previous low reported was 27½ cents per barrel. There were reports in New York last week that boat owners are consolidating their forces and are attempting to halt the down swing which has carried rates down about 60 per cent of their early summer peak when 60 cents per barrel was paid by one company for movement of a cargo of gasoline on an emergency order. Another low charter reported last week was for a cargo of gasoline from the Gulf Coast to North Carolina for 21 cents per barrel.

With new company-owned tankers coming off the ways almost every week or two, the open charter market does not offer a particularly bright prospect for the immediate future. Some boat owners have been reported considering tying up their boats or taking advantage of the slack market to make repairs to equipment. There remains sufficient business for the independently owned fleet to keep owners interested, but insufficient to bolster the market even though millions of barrels of fuel oil remain to be moved from the Gulf Coast to New York and Boston.

The Bunker C fuel oil market seemed firmly established at the lower figure of $1.25 per barrel in New York and other North Atlantic ports. The reductions posted two weeks ago by Standard Oil Co. of New Jersey and followed by other suppliers ranged from 5 cents per barrel at Philadelphia to 15 cents per barrel at two points, Port Everglades, and Tampa, Fla., where Bunker C was quoted at $1.20 and $1.15, respectively. The reduction was 10 cents per barrel at all other American points of delivery.

At the same time Bunker C fuel oil was adjusted, Standard of New Jersey made changes at some points in diesel fuel. At Boston, the diesel fuel price was lowered 5 cents to $2.20 per barrel. Only at one point, Philadelphia, was the diesel price increased on the American coast and there it was raised to $2.20 per barrel.

Maracaibo, Venezuela, was added to the list of points at which Standard of New Jersey quotes Bunker C fuel oil. The Maracaibo price was entered at 98 cents per barrel. At the same time the Carapito, Venezuela, posting was lowered 7 cents to a new quotation of 98 cents per barrel.

No. 6 fuel oil is quoted to the retail trade in New York at prices ranging from 3-6/10 to 4-4/100 cents per gallon, but a majority of the business is reported at prices about midway between the high and low. Some curtailment is reported in delivery orders from strictly industrial consumers of heavy fuel oil, but large buildings are taking up most of the slack since their requirements are steadily increasing.

Nearly a week of colder weather during which temperatures in New York and New England areas dipped to near or below the freezing point developed prompt action in the fuel oil markets. For weeks the fuel oil market has been reasonably active, but it required the colder temperatures to develop a real snap to delivery instructions. Up-state New York and most of New England have had previous experience this winter with freezing temperatures, but last week was the first time since last winter ended that ice formed momentarily in southern New York and northern New Jersey. Fuel oil orders responded promptly, but momentum of the market had not gained sufficient headway to be reflected in the price structure.

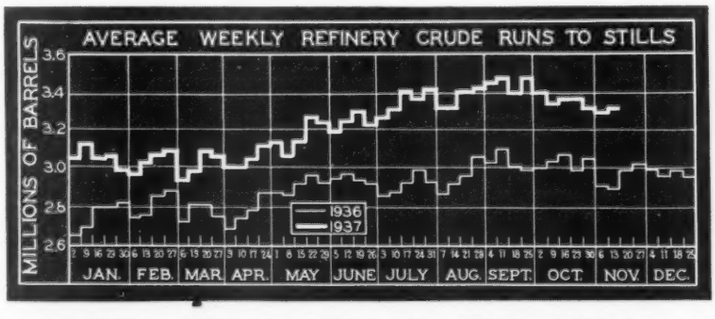
Kerosene in the New York area is enjoying a brisk market with prices holding firm. In New England demand is strong.

A. P. I. Weekly Refinery Statistics

Week Ending November 13, 1937

	Capacity reporting (per cent)	Daily crude runs (bbls.)	Total gasoline stocks	Gas oil and fuel oil stocks
East Coast	100.0	543,000	17,750,000	15,078,000
Appalachian	88.4	106,000	2,606,000	980,000
Indiana, Illinois, Kentucky	92.4	450,000	9,948,000	7,492,000
Oklahoma, Kansas, Missouri	84.7	276,000	6,005,000	3,930,000
Inland Texas	56.6	140,000	2,056,000	1,899,000
Texas Gulf	95.7	734,000	8,661,000	11,496,000
Louisiana Gulf	96.6	148,000	2,007,000	3,572,000
North Louisiana and Arkansas	63.7	47,000	355,000	468,000
Rocky Mountains	69.7	50,000	1,334,000	622,000
California	90.9	524,000	12,683,000	72,225,000
Total reported	89.0	3,018,000	63,405,000	117,762,000
Estimated unreported	.....	317,000	3,630,000	3,250,000
*Estimated total	.....	3,335,000	67,035,000	121,012,000
*Estimated total, previous week	.....	3,325,000	67,271,000	120,925,000
*November 14, 1936	.....	2,900,000	57,584,000	112,841,000

*Bureau of Mines, currently estimated.



Stocks of Crude Oil in the United States

(BUREAU OF MINES ESTIMATES)

Week ending October 30, 1937	307,140,000 barrels
Week ending October 23, 1937	306,556,000 barrels
Week ending October 31, 1936	288,998,000 barrels

RETAIL OIL MARKETS

Tank-wagon and filling station prices on gasoline and kerosene furnished by the larger marketing firms

Prices as of November 16, 1937

Taxes

The gasoline quotations given in the following tables include the 1-cent federal tax, as well as state, county and city taxes. The gasoline is the regular or standard grade. In most areas a third grade and a premium grade are also available.

Standard Oil Co. (Indiana)

	Gasoline Tank wag.	Gasoline Dlr.	Gasoline Inc. tax	Kero. tank-wag.
Chicago, Ill.	15 2	13 2	4 0	10 1
Decatur	15 2	13 7	4 0	10 1
Joliet	15 2	13 7	4 0	10 1
Peoria	15 2	13 7	4 0	10 1
Quincy	15 0	13 5	4 0	9 9
Davenport, Ia.	15 2	13 7	4 0	‡13 1
Des Moines	15 0	13 5	4 0	‡12 9
Mason City	15 4	13 9	4 0	‡13 3
Sioux City	15 2	13 7	4 0	‡13 1
Duluth, Minn.	17 0	15 5	5 0	10 9
Mankato	16 6	15 1	5 0	10 5
Minneapolis	16 6	15 1	5 0	10 5
Lacrosse, Wis.	16 6	15 1	5 0	10 5
Green Bay	16 9	15 4	5 0	10 8
Milwaukee	16 5	15 0	5 0	10 4
Detroit, Mich.	15 1	13 6	4 0	9 8
Grand Rapids	16 2	14 7	4 0	10 9
Saginaw	16 0	14 5	4 0	8 5
Evansville, Ind.	16 7	15 2	5 0	†10 6
Indianapolis	16 9	15 4	5 0	†10 8
South Bend	17 1	15 6	5 0	†9 6
Fargo, N. Dak.	16 6	15 1	4 0	11 5
Minot	17 8	16 3	4 0	12 7
Huron, S. Dak.	17 0	15 5	5 0	10 9
Kans. City, Mo.*	14 6	13 1	4 0	8 0
St. Louis*	14 9	13 4	4 0	9 8
St. Joseph*	14 6	12 4	4 0	9 0
Wichita, Kans.	14 1	12 4	4 0	8 0

*State tax 2 cents, 1-cent city tax and 1-cent federal tax. †Does not include 4-cent state tax. ‡Iowa kerosene prices include 3-cent state tax.

(Exclusive of state general sales taxes, except Indiana and South Dakota.)

Discounts to commercial consumers: On purchases per month off tank-wagon prices: 1,000 gallons or more, 1.5 cents off; minimum delivery 25 gallons.

Stanolex Fuel Oil in Chicago

Effective Dec. 7, 1936, f.o.b. Chicago tank-wagon prices: Range oil, 1-99 gallons, 8.8 cents; 100-149 gallons, 7.8 cents; 150 gallons and over, 7.3 cents. Stanolex No. 1, 1-99 gallons, 8.8 cents; 100-149 gallons, 7.8 cents; 150 gallons and over, 7.0 cents. Stanolex furnace oil, 1-149 gallons, 7.8 cents; 150 gallons and over, 7.0 cents. Stanolex A, 1-399 gallons, 5.75 cents; 400 gallons and over, 4.75 cents. Stanolex B, 1-799 gallons, 5.75 cents; 800 gallons and over, 4.75 cents.

Atlantic Coast District

STANDARD OIL CO. OF NEW JERSEY

	Gasoline Tank wag. dlr.	Gasoline Tank car con'r.	Gasoline Inc. tax	Kero. tank-wag
Atl'tic City, N. J.	12 75	11 25	4 0	9 0
Newark	12 75	11 25	4 0	9 0
Annapolis, Md.	14 85	13 26	5 0	9 5
Baltimore	14 25	12 75	5 0	9 0
Cumberland	16 65	14 15	5 0	10 0
Wash'g'n, D. C.	12 5	11 0	3 0	9 5
Danville, Va.	17 45	14 95	6 0	12 9
Norfolk	16 25	13 75	6 0	11 5
Petersburg	16 55	14 05	6 0	11 7
Richmond	16 55	14 05	6 0	11 7
Roanoke	17 75	15 25	6 0	12 9
Charles'n, W. V.	17 05	14 55	6 0	12 6
Parkersburg	16 35	13 85	6 0	11 2
Wheeling	16 25	14 75	6 0	12 2
Charlotte, N. C.	18 65	16 15	7 0	12 6
Hickory	19 15	16 65	7 0	13 0
Mt. Airy	18 95	16 45	7 0	12 8
Raleigh	18 25	15 75	7 0	12 1
Salisbury	18 75	16 25	7 0	12 7
Charleston, S. C.	17 25	14 75	7 0	11 1
Columbia	18 25	15 75	7 0	12 1
Spartanburg	18 95	16 45	7 0	12 9

Price basis to commercial consumers, effective March 8, 1937, in Maryland, District of Columbia, and in Arlington and Fairfax counties in Virginia; and March 12 in New Jersey: To contract accounts purchasing at least one full compartment at time by hose connection, on yearly purchases: From 2,500 to 100,000 gallons, consumer tank-wagon price at time and place of delivery; 100,000 gallons per year, consumer tankcar price plus .5 cent per gallon. Consumer tank-wagon price generally will be equivalent to dealer tank-wagon price less .5-cent per gallon.

Effective May 15, 1937, in North and South Carolina, West Virginia and Virginia (except Arlington and Fairfax counties): Commercial consumers taking deliveries of 50 gallons (W. Va., 100 gallons) or more at one time will be billed at posted consumer tank-wagon price. Accounts taking deliveries of less than 50 gallons (W. Va., 100 gallons) will be billed at 4 cents per gallon over posted consumer tank-wagon price. Generally the posted consumer tank-wagon price will be equivalent to the dealer price less .5 cent per gallon.

Discount for kerosene, 1 cent off tank-wagon price for 25 gallons or more under contract (contract not necessary in Baltimore) except no discount in New Jersey

Southern District

STANDARD OIL CO. OF KENTUCKY

	Gasoline Tank wag.	Gasoline Net dlr.	Gasoline Inc. tax	Kero. tank-wag.
Atlanta, Ga.	21 0	18 0	7 0*	†12 0
Augusta	21 0	18 0	7 0	*14 0
Macon	21 5	18 5	7 0	*14 5
Savannah	19 0	16 0	7 0	*12 0
Birm'ham, Ala.	22 0	19 0	8 0	12 0
Mobile	22 0	19 0	9 0	11 0
Montgomery	22 0	19 0	9 0	14 5
Jackson, Miss.	20 0	17 0	7 0	*13 0
Vicksburg	20 0	17 0	7 0	*13 0
Jacksonville, Fla.	20 0	17 0	8 0	†10 0
Miami	20 5	17 5	8 0	†12 5
Pensacola	22 0	19 0	9 0	12 0
Tampa	19 0	16 0	8 0	10 5
Lexington, Ky.	19 5	16 5	6 0	11 0
Covington	19 0	16 0	6 0	11 0
Louisville	19 0	16 0	6 0	10 5
Paducah	19 5	16 5	6 0	10 0

Price basis to tank-wagon consumers: Effective January 4, 1937, 3 cents per gallon below tank-wagon price. Kerosene prices in all states subject to 2 cents discount except in Kentucky where prices are net.

*Includes 1-cent state tax. †Subject to 2-cent discount.

Montgomery, Ala., has a county tax of 1 cent per gallon, and a city tax of 1 cent per gallon on gasoline, in addition to state tax; and 1 cent per gallon on kerosene. Mobile, Ala., has a city gasoline tax of 2 cents per gallon; Birmingham, Ala., has a city gasoline tax of 1 cent per gallon; Pensacola has a city gasoline tax of 1 cent.

Rocky Mountain District

CONTINENTAL OIL CO.

	Gasoline Dealer	Gasoline Inc. tax	Kero. tank-wag.
Denver, Colo.	16 5	5 0	11 5
Grand Junction	19 0	5 0	15 0
Pueblo	16 0	5 0	10 5
Casper, Wyo.	17 0	5 0	11 5
Cheyenne	17 0	5 0	13 0
Butte, Mont.	19 5	6 0	15 5
Billings	21 0	6 0	15 5
Helena	21 5	6 0	15 5
Great Falls	21 5	6 0	15 5
Salt Lake City, Utah	19 5	5 0	16 0
Twin Falls, Ida.	21 5	6 0	18 0
Boise	21 5	6 0	18 0
Albuquerque, N. M.	17 5	6 5	12 0

Ohio

STANDARD OIL CO. OF OHIO

	Gasoline Tank wag. con'r.	Gasoline Di-vided dlr.	Gasoline Inc. tax	Kero. tank-wag.
Ohio points	16 5	15.5	5.0	*13 5

*Includes state tax of 1 cent.

New York and New England

SOCONY-VACUUM OIL CO., INC.

	Gasoline Tank wag. dlr.	Gasoline Tank car con'r.	Gasoline Inc. tax	Kero. tank-wag.
Albany, N. Y.	14 5	13 0	5 0	9 0
*Met. N. Y.:				
Manh't'n, Br'nx	14 0	13 0	5 0	9 0
Staten Island	14 5	13 0	5 0	9 0
Q'ns. & Brklyn	14 0	13 0	5 0	9 0
Buffalo	15 05	13 54	5 0	8 5
Rochester	15 0	13 67	5 0	8 5
Syracuse	15 0	14 7	5 0	9 5
Boston, Mass.	11 75	13 0	4 0	8 5
Portland, Me.	13 0	14 8	5 0	8 75
Manch'ter, N. H.	15 8	13 5	5 0	9 5
Burlington, Vt.	15 4	13 4	5 0	9 5

*Does not include 2 per cent city sales tax which is calculated on basis of net retail price exclusive of state and federal taxes.

Price basis to undivided dealer: Posted dealer tank-wagon price less .5 cent. Price basis to commercial consumer: Effective Nov. 15, 1936, monthly purchases of 25,000 gallons and over, consumer tankcar prices at delivery point plus .5 cent per gallon; monthly purchases of 5,000 to 25,000 gallons, undivided dealer price at delivery point; monthly purchases under 5,000 gallons, pay divided dealer tank-wagon price at delivery point.

Pacific Coast Territory

STANDARD OIL CO. OF CALIFORNIA

	Gasoline Tank wag.	Gasoline Serv. sta.	Gasoline Inc. tax	Kero. tank-wag.
San Francisco	17 5	18 5	4 0	11 5
Los Angeles	17 0	18 0	4 0	9 0
Fresno, Calif.	18 5	19 5	4 0	12 0
Phoenix, Ariz.	21 0	22 0	6 0	‡16 0
Reno, Nev.	20 0	21 0	5 0	13 0
Portland, Ore.	20 0	21 0	6 0	13 5
Seattle, Wash.	20 0	21 0	6 0	13 5
Spokane	23 0	24 0	6 0	16 5
Tacoma	20 0	21 0	6 0	13 5

‡Includes 5-cent state tax.

Discounts to dealers: On gasoline, off tank-wagon price, to 100 per cent dealers, 3 cents; to split dealers, 2 cents. To commercial consumers: on tank-wagon price: on single deliveries of 40 gallons and over, advance quantity discount extended at time of delivery, 3 cents. Service station schedule applies on single deliveries less than 40 gallons. On kerosene in tankcar, transport truck and trailer delivery, 3 cents off tank-wagon price; plant deliveries to jobbers, 2.5 cents below tank-wagon.

Nebraska

STANDARD OIL CO. OF NEBRASKA

	Gasoline Tank wag.	Gasoline Dlr.	Gasoline Inc. tax	Kero. tank-wag.
Omaha	17 6	16 7	6 0	10 4
McCook	18 0	14 0	6 0	10 0
Norfolk	18 0	16 5	6 0	10 8
North Platte	18 4	16 9	6 0	11 2
Scotts Bluff	19 1	15 9	6 0	11 9

Discounts to commercial consumers for tank-wagon deliveries covered only by standard commercial consumers contract, effective Jan. 1, 1935.

Central South District

STANDARD OIL CO. OF LOUISIANA

	Gasoline Tank wag. dlr.	Gasoline Tank car con'r.	Gasoline Inc. tax	Kero. tank-wag.
N. Orleans, La.	19 75	17 25	*10 0	†13 0
Baton Rouge	17 75	15 25	8 0	12 0
Alexandria	18 25	15 75	8 0	12 0
Lafayette	18 75	16 25	8 0	13 0
Lake Charles	18 75	16 25	8 0	12 5
Shreveport	17 25	14 75	8 0	9 5
Kn'xv'le, Tenn.	20 75	18 25	8 0	14 0
Memphis	18 75	16 25	8 0	12 0
Chattanooga	20 25	17 75	8 0	13 5
Nashville	19 75	17 25	8 0	11 5
Bristol	19 50	18 25	8 0	14 5

*Includes 2-cent parish tax. †Includes 1-cent parish tax and 1-cent state tax.

Price basis to commercial consumers: Effective May 15, 1937, deliveries of 50 gallons or more in one delivery takes posted consumer tank-wagon price. Accounts taking deliveries of less than 50 gallons at one time pay posted consumer tank-wagon price plus 4 cents per gallon. Generally, the posted consumer tank-wagon price will be equivalent to the dealer price less .5 cent per gallon.

Louisiana kerosene prices include 1 cent state tax.

Pennsylvania, Delaware and Part of New England

ATLANTIC REFINING CO.

	Gasoline Tank wag. dlr.	Gasoline Tank car con'r.	Gasoline Inc. tax	Kero. tank-wag.
Philadelphia, Pa.	14 0	12 5	5 0	10 5
Pittsburgh	15 5	13 5	5 0	11 0
Allentown	15 0	13 5	5 0	11 0
Erie	14 5	13 0	5 0	10 0
Scranton	15 0	13 5	5 0	11 0
Altoona	15 5	13 5	5 0	11 0
Dover, Del.	14 5	....	5 0	11 0
Wilmington	13 5	....	5 0	11 0
Spring'd, Mass.	13 3	....	4 0	9 0
Worcester	14 3	....	4 0	9 0
Hartford, Conn.	14 1	....	4 0	9 0
New Haven	14 0	....	4 0	9 0
Providence, R. I.	14 0	....	4.0	8.5

Price basis to undivided dealers, dealer tank-wagon price less .5 cent per gallon. Price basis to commercial consumers in Pennsylvania and Delaware, effective March 11, 1937: Consumers under contract using 100,000 gallons or more per year full compartment hose deliveries, tankcar plus .5 cent. Consumers under contract using less than 100,000 gallons per year compartment hose deliveries, undivided dealer price. Consumers under contract less than full compartment delivery, consumers not under contract less than full compartment delivery, and consumers not under contract full compartment delivery, divided dealer price. Less than 25 gallons, tank-wagon delivery, 4 cents per gallon above undivided dealer price.

Oklahoma and Arkansas

CONTINENTAL OIL CO.

	Gasoline Dealer	Gasoline Inc. tax	Kero. tank-wag.
Muskogee, Okla.	14 5	5 0	7 0
Oklahoma City	14 0	5 0	8 0
Tulsa	14 0	5 0	6 0
Ft. Smith, Ark.	15 5	5 0	8 0
Little Rock	18 0	7 5	9 5
Texarkana	15 5	5 0	8 5

Texas

	Gasoline Tank wag.	Gasoline Serv. sta.	Gasoline Inc. tax	Kero. tank-wag.
Dallas, Tex.	14 0	18 5	5 0	8 0
Fort Worth	14 0	18 0	5 0	8 0
Houston	14 5	19 0	5 0	8 0
San Antonio	14 5	18 5	5 0	8 0

Naphtha

STANDARD OIL CO. (INDIANA)

	Tank-wagon*
Oleum spirits	15.7
V.M.&P. naphtha	16.0
Cleaners' naphtha	15.0
Stanisol	15.0

*Prices include 3-cent Illinois tax, but not 1-cent federal tax or 2 per cent retail occupational tax.

Prices f.o.b. Chicago. Each price subject to discount of 1 cent per gallon for 150 gallon lots if covered by contract.

Canada*

3 Star Imperial Gasoline
IMPERIAL OIL, LTD.

	Tank-wag.	Inc. tax	Kero tank-wag.
Halifax, N.S.	24 0	8 0	18 5
St. John, N.B.	24 0	8 0	18 5
Montreal, Que.	21 0	6 0	17 5
Toronto, Ont.	22 0	6 0	17 0
Hamilton, Ont.	22 0	6 0	17 0
Winnipeg, Man.	27 5	7 0	20 7
Brandon, Man.	29 8	7 0	22 3
Regina, Sask.	29 5	7 0	22 0
Saskatoon, Sask.	32 3	7 0	24 8
Edmonton, Alta.	29 5	7 0	24 2
Calgary, Alta.	27 0	7 0	21 5
Vancouver, B.C.	23 0	7 0	23 0

*Imperial gallon used in Canada.

Divided dealers pay tank-wagon price. Discount to undivided dealers, 1 cent below tank-wagon price. In maritime provinces both divided and undivided dealers pay tank-wagon price.

Retail Price Changes

Standard Oil Co. of New Jersey November 15 reduced tankcar and dealer gasoline .75 cent at all points in the accompanying table except in Washington where the prices were unchanged.

Standard Oil Co. of Kentucky November 3 reduced tank-wagon and dealer gasoline .5 cent in Covington; November 4 reduced tank-wagon and dealer gasoline .5 cent in Lexington and Paducah, and 1 cent in Louisville; November 8 advanced tank-wagon and dealer gasoline 2 cents in Birmingham.

Continental Oil Co. November 8 reduced dealer gasoline 1 cent in Denver, Grand Junction, Casper and Cheyenne, and .5 cent in Muskogee.

Standard Oil Co. of Louisiana November 15 reduced tankcar and dealer gasoline .75 cent throughout its territory.

Oil Men Injured

VICTORIA, Tex.—Howard Brainin and T. R. Clark, Houston oil men, were seriously injured in an auto accident between Inez and Edna, in Jackson County. Mr. Clark was found to be suffering from two fractures on his left leg, a broken right leg and possible internal injuries. Mr. Brainin suffered severe cuts on his face, a fractured pelvic bone and possible internal injuries.

Their car was reported to have been sideswiped causing it to overturn in a ditch.

PRICES OF REFINED PRODUCTS

All quotations f.o.b. plant in cars for interstate or export movement except as otherwise noted

Prices as of November 16, 1937

The following quotations are exclusive of the federal excise taxes of 1 cent a gallon on gasoline and 4 cents on lubricating oils.

Refinery Gasoline

OKLAHOMA (Group 3)—

U. S. Motor grades:		
62 oct. and below (3d gr.)	.04⅛	.04⅜
63-66 octane	.04½	.04⅝
67-69 octane	.04⅞	.05
70-72 octane (regular)	.05¼	.05⅜
60-62 400 grades:		
62 oct. and below (3d gr.)	.04⅛	.04⅜
63-66 octane	.04½	.04⅝
67-69 octane	.04⅞	.05
70-72 octane (regular)	.05¼	.05⅜
64-66 375	.04⅞	.05
68-70 360	.05	.05⅛

NORTH TEXAS—

U. S. Motor grades:		
62 octane and below	.04⅛	.04⅜
63-66 octane	.04½	.04⅝
67-69 octane	.04⅞	.05
70-72 octane (regular)	.05¼	.05⅜
60-62 400	.04¼	.04⅜
64-66 375	.04⅞	.05

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

U. S. Motor grades:		
62 octane and below	.04¾	.05
63-66 octane	.05	.05¼
67-69 octane	.05⅜	.05⅝
70-72 octane (regular)	.05¾	.05⅞

ARKANSAS (Ark., N. La., Miss. del.)—

U. S. Motor grades:		
62 octane and below	.04¾	.05¼
63-66 octane	.05	.05¼
67-69 octane	.05⅜	.05⅝
70-72 octane (regular)	.05¾	.05⅞

CHICAGO (Based on Group 3)—

U. S. Motor grades:		
62 octane and below	.04⅛	.04⅜
63-66 octane	.04½	.04¾
67-69 octane	.04⅞	.05⅛
70-72 octane (regular)	.05¼	.05⅝
60-62 400 grades:		
62 octane and below	.04⅛	.04⅜
63-66 octane	.04½	.04¾
67-69 octane	.04⅞	.05¼
70-72 octane (regular)	.05¼	.05½
64-66 375	.04⅞	.05¼
68-70 360	.05	.05¼

PENNSYLVANIA (inland refineries)—

58-60 U. S. Motor:		
Below 60 octane	.05	.05¼
60-64.9 octane	.06⅞	.07⅛
65-70 octane	.07	.07¼
64-66 390	.05¾	.05⅞
68-70 350	.05⅞	.06

CALIFORNIA (domestic movement)—

54-58 U. S. Motor	.07½	.08½
58-60 400, 65 oct. and higher	.08¼	.09¼

EAST COAST (Domestic)—

U. S. Motor below 60 octane:		
*New York (Bayonne)	.06¼	.06½
Baltimore	.06	.06¼
U. S. Motor, 60-64.9 octane:		
*New York (Bayonne)	.07¼	.07⅜
Philadelphia	.07¼	.07½
Boston	.07¾	.08¼
Baltimore	.07¼	.07½
Charleston, S. C.	.07¼	.07⅜
U. S. Motor, 65 and above:		
*New York (Bayonne)	.07½	.08
Philadelphia	.07¼	.07⅜
Boston	.07¾	.08¼
Baltimore	.07½	.08
Charleston, S. C.	.07¾	.08¼

*All grades of gasoline one-eighth to one-fourth cent less for barge shipments. New York harbor prices are for New York and New England delivery. Prices for New Jersey delivery one-fourth cent lower.

GULF COAST (domestic)—

U. S. Motor grades:	
Below 60 octane	.05½
60-64.9	.05⅝
65 octane and higher	.05¾

Naphtha

PENNSYLVANIA (inland refineries)—

50-52 450 (blending)	.05¼	.05½
52-54 450 (blending)	.05¼	.05½
54-56 450 (blending)	.05¼	.05½

Natural Gasoline

OKLAHOMA (Group 3)—

Grade 26-70	.03⅜
Grade 18-55	.04½

NORTH TEXAS—

Grade 26-70	.03¾
Grade 18-55	.04½

CALIFORNIA—

75-85 375-390	.06¾	.07½

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

Grade 26-70	.04⅝	.04¾

Tractor Fuel

OKLAHOMA (Group 3)—

40-42 gr., 315-325 i.b.p., 110 flash, 540-550 e.p.	.04⅛	.04¼
41-43 gr., 300-350 i.b.p., 110-125 flash, 500-520 e.p.	.04¼	.04½
46-48 gr., 210-320 i.b.p., 480 max., e.p.	.04¾	.04⅞

Kerosene

(All kerosene water white)

OKLAHOMA (Group 3)—

41-43	.04⅛	.04¼
42-44	.04¼	.04½

NORTH TEXAS—

41-43	.04⅛	.04¼

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

41-43	.04½

ARKANSAS (Ark., N. La., Miss. del.)—

41-43	.04½

PENNSYLVANIA (inland refineries)—

45	.05½	.05⅝
46	.05⅝	.05¾
47	.05¾	.05⅞

CHICAGO (Based on Group 3)—

41-43	.04	.04¼
42-44	.04¼	.04½

CALIFORNIA (Pac. Coast market)—

38-43 high burning test	.05¼	.06¼

NEW YORK (Bayonne, N. J.)—

41-43	.06 3/10

***GULF COAST (domestic)—**

41-43	.05¼

*Barge price one-eighth cent lower.

Furnace Oil

OKLAHOMA (Group 3)—

No. 1 prime white, 38-42	.04	.04⅛
No. 1 straw, 38-40		.03⅞
No. 2 straw, 32-36	.03⅝	.03⅞
No. 2 dark, 32-36	.03½	.03⅝
No. 3 zero to 15, 28-32	.03⅜	.03½
No. 3, 15 and above, 28-32	.02⅞	.03

NORTH TEXAS—

No. 1 prime white, 38-42	.04	.04⅛
No. 1 straw, 38-40	.03¾	.03⅞

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

No. 2, 32-36	.03½ .03⅝

ARKANSAS (Ark., N. La., Miss. del.)—

No. 2, 32-36	.03¾

CHICAGO (Based on Group 3)—

No. 1 prime white, 38-40	.04	.04⅛
No. 1 straw, 38-40	.03¾	.03⅞
No. 2 straw, 32-36	.03⅝	.03¾
No. 2 dark, 32-36	.03⅜	.03⅝
No. 3, zero to 15, 28-32	.03⅜	.03½
No. 3, 15 and above, 28-32	.02⅞	.03

NEW YORK (Bayonne, N. J.)—

*No. 1	.06 3/10
*No. 2	.05½
*No. 4	.05¼

*Barge deliveries one-eighth to one-fourth cent under above tankcar price.

Gas Oil and Fuel Oil

(Gas oil per gal.; fuel oil per bbl.)

OKLAHOMA (Group 3)—

U.G.I. gas oil	.02⅞	.03
No. 4, low cold test, 24-28	1.07½	1.12½
No. 4, 15 and above, 24-28	.90	.95
No. 5, low cold test, 18-22	.85	.90
Below 18 fuel oil, industrial	.75	.80

NORTH TEXAS—

U.G.I. gas oil	.03	.03⅛
No. 4, low cold test, 24-28	1.07½	1.12½
No. 5, low cold test, 18-22	.82½	.87½
Below 18 fuel oil, industrial	.75	.80

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

10-14 fuel oil, industrial	.80	.85

CHICAGO (Based on Group 3)—

U.G.I. gas oil	.03	.03⅛
No. 4, low cold test, 24-28	1.07½	1.12½
No. 4, 15 and above, 24-28	.90	.95
No. 5, low cold test, 18-22	.85	.90
No. 5, 15 and above (18-22)	.80	.85
No. 6, low cold test, 10-16	.77½	.82½

PENNSYLVANIA (inland refineries)—

36-40	.04¾	.05

CALIFORNIA—

Los Angeles:		
30-34 gas oil, per bbl.	1.45	1.70
24 plus diesel, per bbl.	1.40	1.75
24 plus diesel (bunkers)	1.60	1.80
12-16 (bunkers at tidewater)	1.05	1.10
10-16 (cargo lots)	.90	1.10
12-17 (tankcars)	.95	1.10
10-17 (high sulfur)	.70	1.00
San Joaquin Valley:		
10-18 (tankcars)	.65	1.00
24 plus diesel, per bbl.	1.40	1.60
San Francisco:		
24 plus diesel, per bbl.	1.55	1.65
24 plus diesel (bunkers)	1.60	1.65
10-16 (bunkers)	1.10	1.15

GULF COAST—

28-30 gas oil	.04½	.04⅝
28-30 diesel (bunkers)		1.90
Bunkers (bulk cargoes)		.85
Bunker C (bunkers)		1.05

NEW YORK (Bayonne N. J.)—

27 plus, gas oil	.05	.05¼
28-30 diesel (lighterage 6¼c per bbl.)		2.20
28-30 diesel (tankcars)		.05¼
Bunker C (to ocean-going ships in N. Y. harbor)		1.25
Industrial fuel (tankcars)	.04½	.04¾

Lighterage charge 5c bbl. additional.

Bright and Steam Refined

OKLAHOMA (Group 3)—

Bright Stocks:	
190-200 D, 15-25	.20
150-160 D, 0-10	.17
150-160 D, 15-25	.16
150-160 E, 15-25	.15½
100-110 D, 0-10	.15½
Steam refined:	
631 green (treated)	.14½
600 dark green (untreated)	.05

PENNSYLVANIA—

Bright Stocks (Pennsylvania Grade No. 8 color, 140-150 at 210, 545-550 flash):

10 pour test	.19	.20
15 pour test	.18	.19
20 pour test	.17	.18
25 pour test	.16	.17
Steam refined:		
600	.08	.08½
650	.11½	.12
600 Pennsylvania flash	.13	.13½
630 flash	.17	.17½
600 Warren E filtered	.13	.13½

Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

OKLAHOMA (Group 3)—

Zero to 10 Cold Test:	
150-3	.09
180-3	.10
180-4	.09½
200-3	.10½
200-4	.10
250-3	.11½
250-4	.11
280-3	.12½
280-4	.12
300-3½	.13
400-3½	.14
100-2½ paraffin oil	.06
15-20 Cold Test:	
200-3	.10
200-4	.09½
250-3	.11
250-4	.10½
280-3	.12
280-4	.11½

GULF COAST—

Pale Oils:		
200-3	.07	.07¼
300-3	.07½	.07¾
500-3½	.08½	.08¾
750-3½	.08⅝	.09¼
1,200-3½	.09½	.09¾
1,500-4	.09¾	.10
Red Oils:		
200-5-6	.07¼	.07½
300-5-6	.07¼	.07½
500-5-6	.08	.08½
750	.08¾	.09
1,200-5-6	.09¼	.09½

CALIFORNIA (moving to dom. market)—

Pale Oils:		
100-2½-3	.07¼	.08
200-2½-3	.07¼	.08
300-2½-3	.07¼	.08
400-3-4	.07¼	.08
450-3-4	.07¼	.08
550-3-4	.09	.11
600-3-4	.09	.11
Red Oils:		
200-4-5	.07¼	.08
300-5-6	.07¼	.08
350-5-6	.09¼	.11½
400-5-6	.09¼	.11½
450-5-6	.09¼	.11½
500-5-6	.09¼	.11½
600-5-6½	.09¼	.11½
700-6½ plus	.09¼	.11½
750-6½ plus	.09¼	.11½
900-6½ plus	.09¼	.11½

PENNSYLVANIA—

150 vis. at 70° F. color, 400-405 flash:		
Zero pour test	.19	.19½
10 pour test	.18	.18½
15 pour test	.17½	.18
25 pour test	.16½	.17½
180 vis. at 70° F., 3 color:		
25 pour test	.19	.19½
200 vis. at 70° F., 3 color:		
Zero pour test	.23	.23½
10 pour test	.22	.22½
15 pour test	.21½	.22
25 pour test	.20½	.21

Wax and Petrolatum

(Prices per pound)

OKLAHOMA (Group 3)—

124-126 (a.m.p.) w.c. scale	.03

PENNSYLVANIA (inland refineries)—

122-124 (a.m.p.) w.c. scale	.0295	.0300
124-126 (a.m.p.) w.c. scale	.0295	.0300

NEW YORK—

Wax in bags fully refined:		
122-125 (a.m.p.) wax		.0445
125-127 (a.m.p.) wax		.0455
128-130 (a.m.p.) wax		.0480
130-132 (a.m.p.) wax		.0505
133-135 (a.m.p.) wax		.0535
135-137 (a.m.p.) wax		.0560
124-126 (a.m.p.) w.s.	.0295	.0300
124-126 (a.m.p.) v.s.	.0265	.0280
Petrolatum in barrels, carload lots:		
Dark green		.01 7⁄₈
Amber	.02⅞	.03
Extra amber	.03	.03¼
Lily white	.06⅝	.06¾
Snow white	.07¾	.07⅞
Cream	.05⅝	.05¾

Export Prices

GASOLINE

GULF COAST—

U. S. Motor	.05⅞
60-62 400	.05½
61-63 390	.05⅝
64-66 375	.05¾

LOS ANGELES—

U. S. Motor grades:		
55-65 octane	.05¾	.06
65-69 octane		.06⅛
Above 69 octane		.06½

KEROSENE

GULF COAST—

41-43 prime white	.05
41-43 water white	.05¼
44 water white	.05½

LOS ANGELES—

41-43 water white	.04½	.05

LUBRICANTS

(Pennsylvania Grade)

NEW YORK (f.o.b. in bbls.)—

Cylinder Stocks:		
600 Warren E	.21½	.22
600 S.R. unfiltered	.16½	.17
630 S.R. unfiltered	.21	.21½
600 flash, S.R.	.21½	.22
630 flash, S.R.	.25½	.26
Bright Stocks:		
8 color	.23½	.24
6½ plus color in dilution	.23	.23½

NEUTRAL OIL

200-3 color	.30	.30½
150-3 color	.25½	.26

PARAFFIN WAX

NEW YORK (prices per pound)—

123-126 a.m.p.		.04125
125-127 a.m.p.		.0425
128-130 a.m.p.		.0450
133-135 a.m.p.		.0525
135-137 a.m.p.		.0550
Crude Scale:		
124-126 w.s.	.0295	.0300
124-126 y.s.	.0265	.0280

CRUDE OIL PRICES

Oklahoma, Kansas, North Central and East Central Texas

(January 28, 1937)

East Texas (May 22, 1937)*	$1 35
Van, Tex.†	1 10
Camp Hill, Tex.	1 27
Cass County, Tex.‡	1.25
Talco	.73
Altus and Tipton, Okla.§	1 20
Other fields (see gravity table).	

*All companies. †Humble Oil & Refining Co.; Pure Oil Co. ‡Texas Co. §Gulf Oil Co. Talco by Humble Oil & Refining Co.

West Texas

See gravity table.

Pecos County*	.91
Pecos shallow†	.81

*Shell Petroleum Corp., Gulf Pipe Line Co., and Humble Oil & Refining Co. †Shell Petroleum Corp.

Rocky Mountain States

(Effective January 28, 1937)

Iles, Colo., light*	$1.18
Iles, Colo., heavy*	1 12
Greybull, Wyo.*	1.30
Torchlight, Wyo.*	1.30
Grass Creek, Wyo., light*†	1.30
Grass Creek, Wyo., heavy (Nov. 4, 1936)*†	.62
Hamilton Dome, Wyo. (Jan. 1, 1937)*	.67
Elk Basin, Wyo., light*†	1 30
Frannie, Wyo., heavy*	.62
Frannie, Wyo., light	.70
Hogback, New Mex. (Jan. 1, 1937)*	1 21
Pondera, Mont. (Jan. 26, 1936)*	1 05
Salt Creek Dutton Creek and Midway, Wyo., take Stanolind's Oklahoma prices on a gravity basis.	
Big Muddy, Wyo.†	1 23
Rock Creek, Wyo.†	1 20½
Lea County, N. M. (see West Texas gravity table)	
Artesia, N. Mex. (Jan. 28, 1937)‡	.92
Maljamar, N. Mex. (Jan. 28, 1937)	.92
Canon City and Florence, Colo.	1.10
Lance Creek, Wyo.	.97
Sunburst, Mont. (Oct. 25, 1937)†	1 05
Cat Creek, Mont. (Oct. 25, 1937) gr. scale $1.05 below 35°; $1.30 above 40°*	
Cut Bank, Mont. (Oct. 25, 1937), (posted by Northwest Refining Co.)	1.10
Garland, Wyo. (Jan. 1, 1937)†	.50

*Standard Oil & Gas Co. †Ohio Oil Co. ‡Continental Oil Co. Cut Bank by Toronto Pipe Line Co.

Middle Western States

OHIO OIL CO.
(Effective January 28, 1937)

Lima	$1.25
Illinois	1 35
Princeton, Ind.	1.35
Midland, Mich. (July 23, 1937)*	1 27
West Branch, Mich. (July 22, 1937)	1 09
Buckeye (July 23, 1937)	1.24½
Arenac, Mich (July 1, 1937)	1.21
Muskegon, Mich.	1.00
Eastern Kentucky:	
Big Sandy River	1.42
Kentucky River	1.50
Western Kentucky	1.40

*Posted by Pure Oil Co.

Midland, Mich., price posted by Simrall Corp. and Pure Oil Co. includes Greendale, Porter, Beaverton, Crystal and equal grades. West Branch and Arenac by Simrall Corp. Eastern Kentucky crude purchased by Ashland Refining Co., Ashland, Ky. Buckeye posted by Simrall Corp. and Pure Oil Co.

Gulf Coast

(January 28, 1937)

Choctaw and Darrow, La. See note below	
Clay Creek, Tex.	$1.00
Garden Island, La.	1 37
Cleveland, Tex.	1.27
Hardin, Tex.	1.15
Lafitte, La.	1.24
Livingston, Tex.	1.27
Welsh, La.	.98
Tepetate (La.) (Jan. 4, 1937)	1.12

Duval, Jim Hogg, Webb and Zapata counties, Texas, and Heyser and Placedo fields take Mirando gravity prices. Jennings, La., 5 cents lower than Gulf Coast prices on each degree. Segno, Texas, takes Gulf Refining Co.'s Gulf Coast prices. Choctaw and Darrow, Louisiana, posted for first time by Standard Oil Co. of Louisiana, start below 21 degrees at 90 cents, with 3-cent differential up to 25 gravity, then 2-cent differential up to 40 and above, $1.36. Effective October 1, 1937, Stanolind Oil & Gas Co. in Evangeline, La., pays 92 cents for below 20 gravity, adding 2 cents for each degree upward to 40 and over, at $1.34.

Southwest Texas

(January 28, 1937)

Pettus	1.37
Salt Flat, Darst Creek, Hilbig, Carroll, Clark, Zoboroski	1.09
Luling	1.06
Lytton Springs	1.12

Saxet and Taft take same gravity table as Gulf Coast.

North Louisiana and Arkansas

Smackover, all grades	$ .90
Tullos and Urania	1.02
El Dorado East field	.90
Union County, Ark.	.90
Ouachita County, Ark.	.90

Eastern States

(Prices are 25 cents per bbl. below those posted on September 1)

TIDE WATER ASSOCIATED OIL CO.
(Effective October 12, 1937)

Bradford, Pa.	$2.35
Allegany, N. Y.	2.35

SOUTH PENN OIL CO.
(Effective October 12, 1937)

Pennsylvania Grade Oil in National Transit Lines (Bradford field)	2.35
Pennsylvania Grade Oil in Southwest Pennsylvania Lines	2.05
Pennsylvania Grade Oil in Eureka Pipe Line lines	2.00
Pennsylvania Grade Oil in Buckeye Pipe Line lines	1.85
Corning Grade Oil in Buckeye Pipe Line Co.'s lines	1.27

PENNZOIL CO.
(Effective October 12, 1937)

Pennsylvania Grade Oil in National Transit Lines:	
Group A — Includes Cochran, Franklin, Hamilton and Doolittle districts.	2.35
Group B — Includes Tidioute district.	2.34
Group C — Includes Turkey and Tidioute districts.	2.30
Group D — Includes Bear Creek and Porkey districts.	2.29
Group E — Includes Eldeneau, Bull Creek, Rough Run, Carbon, Dipner, Bredlin, McJunkin, Jameson, Kenerdell, Emlenton, Tiona, Lacey and Kinzua districts.	2.26

PURE OIL CO.
(Effective October 12, 1937)

Cabin Creek, W. Va.	2.00
Bradford Hollow, W. Va.	2.00
Kelly Creek, W. Va.	2.00

Canada

Ontario (Sept. 9, 1933)*

Petrolia	$2.10
Oil Springs	2.17
TURNER VALLEY NAPHTHAS AND CRUDE OIL (September 1, 1937, by Imperial Oil, Ltd.)	
Clear naphtha and discolored naphtha, 65 gravity and higher	$2.36
Discolored naphtha and crude oil 40-40.9 gravity	1.36
Increasing 2 cents for each degree gravity with top price for 64-64.9 gravity	1.84

These prices f.o.b. producers field tankage.

*Imperial Oil, Ltd.

Mexico

Heavy Mexican crude	$.95

*In U. S. currency, f.o.b. ship, based on October spot market transactions.

Wickett Cuts Crude Price

Wickett Pipe Line Co., effective November 10, reduced its posted prices for Ward County, Texas, crude 10 cents per barrel on all grades, making its prices range from 68 cents for 25-gravity crude, up to 98 cents for 40-gravity and over, with a 2-cent differential. No other West Texas crude buyer had met the price up to November 16.

NORTH TEXAS

Completions

Archer County

J. M. Berkley No. 1 F. W. Pollei, 1,114-62 feet, 30 bbls. Bridwell Oil Co. No. 5 L. F. Wilson F, 1,390-96 feet, 10 bbls.; No. 6 L. F. Wilson F, 1,392-98 feet, 10 bbls. L. T. Burns, trustee, No. 15 F. Albers A, 1,236-63 feet, 10 bbls. C. H. Herbig No. 2 H. O. Prideaux, 656 feet, dry. White & Duncan No. 7 C. Webb A, 745 feet, dry.

Clay County

Jack Story and others No. 1 R. H. Davis, 1,202 feet, dry.

Cooke County

F. W. Merrick, Inc., No. 8 Natt Piott, 343-44 feet, 200,000 feet gas.

Jack County

Bennett Petroleum Corp. No. 3 J. S. W. Owen, 3,210-17 feet, 225 bbls. Cochburn Oil Co. No. 2 Mrs. S. A. Enlow, 3,133-99 feet, 290 bbls. Edwards Knowles & Crespi No. 4 G. L. Jones, 2,960-3,153 feet, 300 bbls. Hamilton Petroleum Co. No. 4 J. S. Rhodes, 2,342-60 feet, 575 bbls. Hanlon-Buchanan, Inc., No. 3 E. B. Calvin, 3,013-59 feet, 250 bbls. T. D. Humphrey No. 6 W. J. Smith, 2,947-75 feet, 200 bbls. W. M. Johnson No. 3 fee, 692 feet, dry. R. H. Manning No. 1 Bryson, 3,017-52 feet, 100 bbls. Mullendore, Berry & Berry No. 7 R. R. Clayton, 2,969-3,097 feet, 180 bbls. Ohio Fuel Supply Co. No. 2 B. C. Miller, 3,138 feet, dry. O. J. Perrin and others No. 1 Clayton, 2,980-3,092 feet, 900 bbls.

Wichita County

L. T. Burns No. 16 First National Co., 3,651-3,840 feet, 650 bbls.; No. 17 First National Co., 3,631-3,855 feet, 775 bbls. Fresno Oil Co. No. 30 L. F. Ramming A, 1,686-1,710 feet, 30 bbls. E. Jeffers No. 1 W. B. Honaker, 615 feet, junked. Floyd Pace No. 13 Allen Foster, 484 feet, dry. Panhandle Refining Co. No. 17 L. F. Ramming, 1,815 feet, dry. Perkins & Cullum No. 9 S. B. Burnett and others A, 1,543-53 feet, 10 bbls. George Proctor No. 19 Foster & Allen A, 1,937-40 feet, 350 bbls. S. H. Walton No. 9 Will Burnett, 480-90 feet, 10 bbls.

Crude Prices by Gravities

	Oklahoma-Kansas 1	Oklahoma-Kansas 2	North and Central Texas 3	East Central Texas (Mexia district) 4	North Louisiana-Arkansas 5	Gray County, Texas 6	Hutchinson-Carson counties, Texas 7	Rodessa, Louisiana-Texas and Panola County, Texas 8	Conroe, Tomball, Raccoon Bend, (Deep) Satsuma 9	Gulf Coast 10	Gulf Coast 11	Lea County, N. Mex. West Texas except Pecos County 12	Mirando district, Texas 13	Marion County, Texas 14	Refugio, Greta, Saxet, Taft, Texas 15	Anahuac, Flour Bluff, Dickson, Turtle Bay 16	White Castle, Louisiana 17	Iowa, Louisiana 18	Cayuga, Texas 19
Bel. 18	....	....	....	....	....	....	....	....	....	$.90	....	....	....	....	....	....	....	$ .90	....
18-18.9	....	....	....	....	....	....	....	....	....	.92	....	....	....	....	....	....	....	.92	....
19-19.9	....	....	....	....	....	....	....	....	....	.94	....	....	....	....	....	....	$ .94	.94	....
20-20.9	....	....	....	....	....	....	....	....	....	.96	$.95	....	$.96	....	$1 01	....	.96	.96	....
21-21.9	....	....	....	....	....	....	....	....	....	.98	.98	....	.98	....	1 03	....	.98	.98	....
22-22.9	....	....	....	....	....	....	....	....	....	1 01	1.01	....	1.00	....	1 05	....	1 01	1.01	....
23-23.9	....	....	....	....	....	....	....	....	....	1 04	1.04	....	1.02	....	1 07	....	1 04	1 04	....
24-24.9	....	....	....	....	....	....	....	....	....	1.07	1.07	....	1.04	....	1.09	....	1 07	1 07	....
Bel. 25	....	$ 98	....	....	$ .90	....	....	$.93	....	....	....	....	....	$ .90	....	....	....	....	$ .88
25-25.9	....	1 00	....	....	.92	....	....	.95	....	1.10	1.10	$.78	1.06	.92	1.11	....	1 10	1 10	.90
26-26.9	....	1 02	....	....	.94	....	....	.97	....	1 13	1.13	.80	1 08	.94	1.13	....	1 13	1 13	.92
27-27.9	....	1 04	....	....	.96	....	....	.99	....	1.15	1.15	.82	1.10	.96	1 15	....	1 15	1 15	.94
28-28.9	....	1.06	....	....	.98	....	....	1.01	....	1.17	1.17	.84	1.12	.98	1.17	....	1 17	1 17	.96
Bel. 29	$1 06	....	$ 96	$1 03	....	....	....	....	$1 20	....	....	....	....	....	....	....	....	....	....
29-29.9	1 08	1 08	.98	1 05	1 00	....	....	1 03	1.22	1 19	1.19	.86	1 14	1 00	1 19	....	1 19	1 19	.98
30-30.9	1 10	1.10	1 00	1 07	1.02	....	....	1 05	1.24	1 21	1.21	.88	1.16	1 02	1 21	$1 16	1 21	1 21	1 00
31-31.9	1 12	1.12	1 02	1 09	1.04	....	....	1 07	1.26	1 23	1.23	.90	1.18	1 04	1 23	1 18	1 23	1 23	1 02
32-32.9	1 14	1.14	1 04	1 11	1.06	....	....	1 09	1.28	1 25	1.25	.92	1.20	1 06	1 25	1 20	1 25	1 25	1 04
33-33.9	1 16	1.16	1 06	1 13	1.08	....	....	1 11	1.30	1 27	1.27	.94	1.22	1 08	1 27	1 22	1 27	1 27	1 06
34-34.9	1 18	1.18	1 08	1 15	1.10	....	....	1 13	1.32	1.29	1.29	.96	1.24	1.10	1 29	1 24	1 29	1 29	1 08
Bel. 35	....	....	....	....	....	$.96	$.91	....	....	....	....	....	....	....	....	....	....	....	....
35-35.9	1 20	1.20	1.10	1 17	1.12	.98	.93	1.15	1.34	....	1.31	.98	1.26	1.12	1 31	1 26	1 29	1 29	....
36-36.9	1 22	1.22	1.12	1.19	1.14	1.00	.95	1.17	1.36	....	1.33	1.00	1.28	1.14	1.33	1 28	1 29	1 29	....
37-37.9	1 24	1.24	1.14	1 21	1.16	1.02	.97	1.19	1.38	....	1.35	1.02	1.30	1.16	1 35	1 30	1 29	1 29	....
38-38.9	1 26	1.26	1.16	1 23	1.18	1.04	.99	1.21	1.40	....	1.37	1.04	1.32	1.18	1 37	1 32	1 29	1 29	....
39-39.9	1 28	1.28	1.18	1 25	1.20	1.06	1.01	1.23	1.42	....	1.39	1.06	1.34	1.20	1 39	1 34	1 29	1 29	....
40,over	1 30	1.30	1.20	1.27	1.22	1.08	1 03	1.25	1 44	....	1.41	1.08	1.36	1.22	1.41	1.36	1.29	1.29	....

Column 1—Companies posting are Barnsdall, Bell, Champlin, Continental, Cushing, Derby, Bay, Eason, El Dorado, Cities Service, Falcon, Globe, Gulf, Johnson, Kanotex, National, Phillips, White Eagle, Stanolind, Sunray, Texas, Sun Vickers and Wilcox.

Column 2—Anderson & Prichard, Carter, Cosco, Deep Rock, Magnolia, Mid-Continent, Pure, Rock Island, Shell, Sinclair, Skelly and Tide Water.

Column 3—All purchasers.

Column 4—Humble Oil & Refining Co. and Sinclair Oil Purchasing Co.

Columns 5, 6, 7 and 8—All purchasers.

Column 9—Humble Oil & Refining Co. and Sun Oil Co. Tidewater Oil Co.'s schedule starts at 35 degrees, $1.34 with 2-cent spread up to 40 and over at $1.44. (Raccoon Bend prices are for deep sand oil.)

Column 10—The Texas Co. (Gulf Refining Co. pays same prices up to and including 34 gravity, but continues its 2-cent spread up to 40 and over at $1.41.)

Column 11—Humble Oil & Refining Co., Sinclair Prairie Oil Marketing Co., Sun Oil Co.

Column 12—All purchasers.

Column 13—All purchasers (effective July 6, 1937).

Column 14—Magnolia Petroleum Co.

Column 15—Humble Oil & Refining Co. (effective July 6, 1937).

Column 16—Humble Oil & Refining Co.

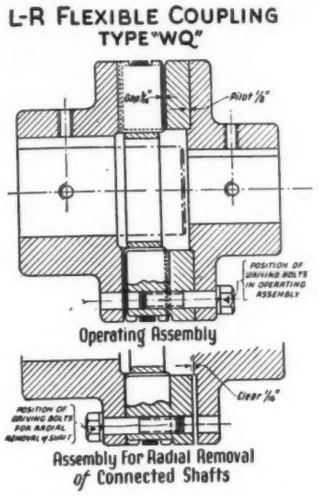
Columns 17 and 18—Shell Petroleum Corp.

Column 19—Tide Water Oil Co.

NEW OR IMPROVED EQUIPMENT

New Adaptation of Coupling Is Designed for Special Needs

A new adaptation of the L-R principle of flexible coupling to meet special needs announced by


L-R FLEXIBLE COUPLING
TYPE "WQ"
Pilot 1/8"
POSITION OF DRIVING BOLTS IN OPERATING ASSEMBLY
Operating Assembly
Clear 1/16"
POSITION OF DRIVING BOLTS FOR RADIAL REMOVAL of SHAFT
Assembly For Radial Removal of Connected Shafts

the Lovejoy Flexible Coupling Co., 5036 West Lake Street, Chicago, is the L-R type WQ. This coupling has one set of jaws made in the form of a removable ring, held in place and driven by 3, 5, 7 or 9 hexagon-head alloy-steel capscrews which operate from the jaw-body.

As the pilot which holds the jaw-ring in place is one-eighth inch deep, while the gap between the cushions and the jaw-body is three-sixteenths inch, when the removable jaw-ring is pulled over there develops a clearance of one-sixteenth inch which is ample for rotating either half of the coupling. This independent rotation is most valuable on such jobs as gasoline, steam, and diesel engines, where it is necessary to set or time the engine, which, of course, cannot be done with the machinery connected.

An important feature is that this disconnecting is done without moving the load cushions or steel retaining-band. The only work necessary is to take out the capscrews and reverse them so that they operate from the other body.

The L-R principle of carrying a load on free-floating load-cushions is an advanced technique. By application of suitable materials and proper design it is possible to increase capacities materially without any change in overall dimensions. They permit easy correction of misalignment on even the heaviest machinery and operate to reduce depreciation materially for the give-and-take of the resilent material used, absorb torque and shocks, and compensate for overload. No lubrication is necessary.

Here and There With Men Who Manufacture Equipment

The Young Engine Co. has appointed the Iverson Tool Co. of Tulsa, distributor for its products in Texas, New Mexico and Kansas. The Iverson company will work in conjunction with A. E. Avers, Young's direct factory representative in Tulsa, who handles sales in Oklahoma.

The S. R. Dresser Manufacturing Co., Bradford, Pa., manufacturer of flexible pipe couplings and pipe-line repair devices, now has New York offices in the New York Central Building, 230 Park Avenue. J. K. Crowell, consulting gas engineer and eastern representative, has his headquarters at this new location. A Chicago office was opened September 15 in the Peoples Gas Building, 122 South Michigan Avenue, with Charles E. Norton in charge.

W. L. Walker and Bill Walker, Jr., Lux CO_2 fire protection engineers of Tulsa, are in New York this week attending a meeting of Lux engineers from all parts of the world as guests of Walter Kidde & Co., Inc., manufacturer of Lux equipment.

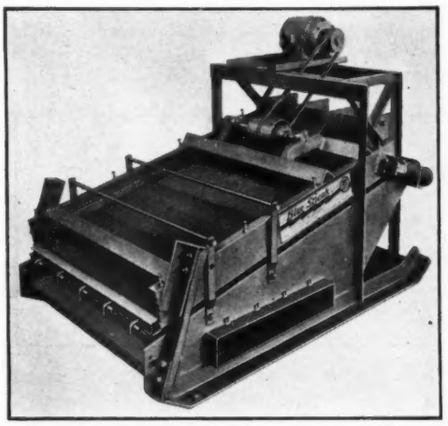
The board of directors of the Worthington Pump and Machinery Corp. have elected into their membership F. Gladden Searle, of Bronxville, N. Y. Mr. Searle is vice president in charge of sales and advertising of the Continental Can Co., and a director of the Vincennes Packing Corp., Vincennes, Ind.

The Manhattan Rubber Manufacturing division of Raybestos-Manhattan, Inc., Passaic, N. J., was awarded honorable mention for its industrial trade paper advertising at the annual convention of the National Industrial Advertisers Association held in Chicago.

Blue Streak Shale-Shaker Has New Type of Spring Action

A new screen for conditioning rotary drill mud is announced under the trade name Blue Streak shale-shaker by the Jeffrey Manufacturing Co., Columbus, Ohio. This unit carries a 4-by-6-foot screen and is of rigid, self-contained construction. Its spring action differs from that of any other unit of similar purpose, the reject end being supported by patented leaf-spring legs, which give a lively screening and conveying action. Amplitude of vibration may be adjusted while the screen is running, by changing the tension of springs on the feed end. Sagging and whipping of the screen cloth are prevented by lengthwise and crosswise supports, and the screen cloth is stretched tautly both ways.

The vibrating unit is an unbalanced pulley on



roller bearings on a stationary shaft, which is rigidly attached to the screen frame. These bearings run in an oil bath inside a sealed housing. Centrifugal force distributes oil over the entire bearing surface.

Askania Announces Device for Oil-Flow Control Problems

An instrument to be used in oil-flow control problems is announced by the Askania Regulator Co., 1603 South Michigan Avenue, Chicago. The purpose of this instrument, the transometer, is to

transform the counter speed of a positive displacement meter into a proportionate air pressure. Since positive displacement meters are not subject to errors in measurement caused by changes in viscosity, temperature and specific gravity, the air impulse created by the transometer is not affected by these variables.

It often has been difficult to obtain an oil-measurement impulse suitable for control purposes. In the illustration the transometer is shown with the protecting cover removed. The sprocket is driven by means of a chain from the countershaft of a positive displacement meter. As the speed of the countershaft increases, that of the sprocket on the transometer increases also. As the speed of the shaft on the transometer changes, the speed of the governor changes accordingly. The action of the governor is transmitted at the Askania jet-pipe, into which air has been introduced to the right-hand inlet. Air leaving the jet-pipe enters a receiving nozzle, which communicates with the top of the diaphragm.

The more nearly the jet-pipe registers with the receiving nozzle, the greater will be the pressure on the diaphragm. As a result the position of the jet-pipe will always be such that the air pressure on the diaphragm exactly balances the centrifugal force of the governor. It follows that the air pressure created by the transometer will be in proportion to the speed of the governor, and an accurate index to the oil flow through the meter.

Since the centrifugal force of the governor is a square function of the speed, the air pressure created by the transometer is also a square function of the oil flow measured by the meter. Therefore, the transometer impulse may be applied to a ration regulator which is actuated secondarily by an impulse obtained from an orifice, venturi or any other means delivering an impulse proportional to the square of the secondary flow.

Palmer Goes to Southwest Supply

W. E. Palmer, who resigned as division tubular manager of the National Supply Co., in Tulsa after 27 years' service with that organization, has been made vice president of the Southwest Supply Co., Philtower Building, Tulsa, W. D. Munder, with National 14 years, succeeds Mr. Palmer.

Caterpillar and Plow Supplant Spade in Work on Pipe Line

The back-bending job of unearthing pipe lines is giving way to a steel plow. Cost of digging up pipe lines for cleaning, painting and wrapping runs into big figures and oil companies have been searching for a method to speed up the operation and lower costs.

The Illinois Pipe Line Co. recently tried out a

new-type Killefer furrower behind a long-track "Caterpillar" Thirty tractor, equipped with a Trackson pipe-layer and back-filler blade. With this outfit a maintenance crew digs out the pipe, raises it to trestles, where it is scoured with a W-K-M cleaner, repaired if necessary, painted and wrapped, and then lowers it and fills the cut. All this is done while the line is in full operation carrying oil at high pressures.

The only hand-shovel work necessary is the final cleaning of the trench before the pipe is relaid. Since the trench must be at least 30 inches wide at the top and 24 inches wide at the bottom to provide room for cleaning operations, a lot of dirt is moved. Under severe digging conditions it may be necessary to make two or more cuts with the plow in order to clear the pipe, but this is done quickly and at low cost compared with hand digging. One cleaning crew will do many times the work accomplished with spades.

Abele Transferred to Tulsa

W. H. (Bill) Abele, oil-field representative for the Link-Belt Co., Chicago, covering the Oklahoma and Kansas territory and the Texas Panhandle, has changed his headquarters from Oklahoma City to Tulsa. Mr. Abele, who has been with Link-Belt three and one-half years, sells roller chains, A.P.I. chains, vibrating screens and malleable castings. He is established in Tulsa at 1527 South Atlanta Place.

Bulletins, Booklets and Other Literature for the Trade

"Chains for Oil-Well Service" is the title of a bulletin announced by the Jeffrey Manufacturing Co., Columbus, Ohio.

Low-temperature impact properties of molybdenum steels are described in the latest number of the Moly Matrix, published by the Climax Molybdenum Co., New York.

An interesting article by A. D. Howard, Houston, Tex., in the current issue of International Power (formerly Powertrax), published by the International Harvester Organization, Chicago, tells how eight lines of pipe, totaling 15,200 feet, were dragged across the Houston ship channel near Baytown, Tex., by five winch-equipped T-40 Trac-TracTors, assisted by four T-20's.

How the Edward high-pressure forged-steel stop valve is utilized in the oil field is told in text and picture in the latest number of Valve Values, published by the Edward Valve & Manufacturing Co., East Chicago, Ind.

"Evolution of Modern Oil Tools Aided by Alloy Steels," "Alloy Steel Gears in Versatile Pump of Unique Design," "Oil-Well Control Equipment Makes Good Use of Cast Nickel Steels," and "High-Strength Bolting Aids Safety of Pressure Vessels," are articles of interest to oil men in the October issue of Nickel Steel Topics, published by the International Nickel Co., Inc., New York.

A broadside announcing the new Master rotary chain, No. 1244-SS, is being distributed by the Baldwin-Duckworth Chain Corp., Springfield, Mass. The Master is tested to 185,000 pounds.

Advantages of Wheelco proportioning control are discussed in a bulletin being distributed by the Wheelco Instruments Co., 1929 South Halstead Street, Chicago.

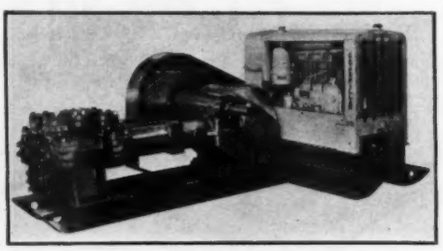
Not the least interesting feature of the current issue of Walworth Today, published by the Walworth Co., Inc., 60 East Forty-second Street, New York, is a reproduction of a circular distributed by the company in 1850. The company, founded 95 years ago, makes valves, fittings, pipe and tools.

A 32-page booklet, "Wrought Iron in Tank Construction," offered by the A. M. Byers Co., Pittsburgh, Pa., presents pictures of new and old installations. The text includes interesting service histories of tanks installed many years before the close of the nineteenth century.

National Transit Power Pump Is Designed for Oil-Field Use

A new 5 by 10 portable duplex-piston power pump is offered by the National Transit Pump & Machine Co. of Oil City, Pa. The liquid cylinders are of side-pot design, cast en bloc. The power end is fully enclosed and self-lubricating, with SKF roller bearings on both crankshaft and pinion-shaft.

The fluid cylinders are good for a maximum pressure of 1,500 pounds, and by means of interchangeable liners and pistons the capacity is variable to maintain the ultimate horsepower within the rating of the power end. For instance, with a 3¼-inch piston, the 1,500 pounds pressure is avail-

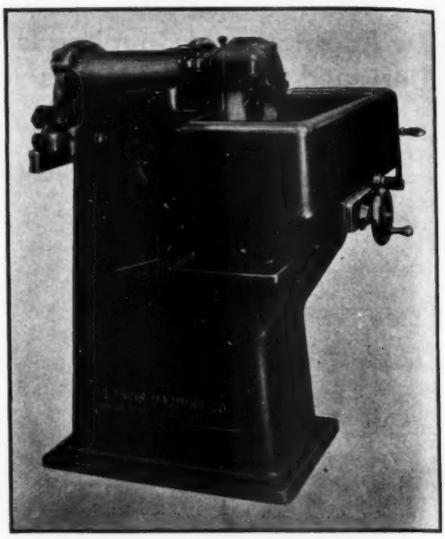


able, and with the 5-inch piston, pressures up to 650 pounds are available.

The pump is especially adaptable for field use, blowing out plugged flow-lines, standby block station service, killing wells, etc., and is arranged to be driven through V-belts by diesel or gasoline engines. Electric motor drive is of course possible. Circular 2,702 describes the pump in detail.

New Line of Chaser-Grinders Is Placed on Market by Landis

The Landis Machine Co., Waynesboro, Pa., manufacturer of thread-cutting dieheads and threading machines, announces a new line of chaser-grinders to replace the Model Y and No. 2



grinders. The new line consists of three models covering the entire range of sizes of Landis chasers.

The new grinders are motorized, the grinding wheels being mounted directly on the armature-shaft of the motor, thus eliminating gear or chain drives. Two grinding wheels, one cup and one straight, are supplied as standard equipment. The straight wheel is used for grinding the rake angles of Landis bolt-chasers where a leadscrew is not used. A rest that is adjustable to any angle is provided to facilitate this operation. The straight wheel may also be used for miscellaneous grinding. The cup wheel is used for grinding the lead and rake angles of all pipe-chasers and bolt-chasers when the thread is to be cut with the use of a leadscrew.

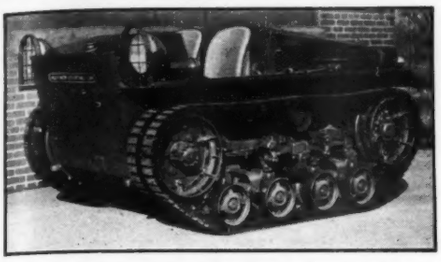
The model O is a small machine, designed primarily for the grinding of Landis chasers for the smaller sizes of Landis dieheads. The No. 1 grinder is a heavier-duty machine and may be used for grinding all Landis chasers up to 1⅞ inches wide. This machine replaces the old model Y grinder and is said to be an excellent machine for use in tool rooms, for the production grinding of Landis chasers. The No. 1½ grinder, shown in the accompanying picture, is an extra-heavy duty machine designed for grinding the largest Landis chasers under the most severe production conditions. This is the only one of the three models in which means are provided for the use of a coolant on the cup wheel, to reduce heat generation and eliminate the possibility of burning the chasers. The model 1½ is also the only grinder that employs a traversing table at the cup wheel end. The model O and No. 1 employ a new method for infeeding the chaser and passing it back and forth across the face of the wheel.

Payne Treasurer Also

F. H. Payne, president of the American Meter Co., has been elected treasurer also, filling the vacancy created by the death of Donald McDonald. The vacant office of secretary was filled by election of John Van Norden, formerly assistant secretary. Mr. Van Norden also was elected assistant treasurer, and will be in resident charge of the New York general offices at 60 East Forty-second Street. He will continue as manager of sales promotion.

Marmon-Herrington Tractor Is Built for Speed and Power

A new tractor said to represent outstanding progress in commercial track-laying tractor design, maneuverability, power, speed and economical operation has been announced by the Marmon-Herrington Co., of Indianapolis, Ind., engineers and



manufacturers. The new tractor is capable of road speeds of 25 miles an hour and better. Four to five miles per gallon of gasoline is said to be the average performance.

The machine utilizes the B. F. Goodrich new type of track with Marmon-Herrington patented suspension. The track combines the strength of steel and the cushioning effect of rubber to allow smooth, quiet operation. Greater tractive ability is realized and track mileage is said to have been increased more than 500 per cent.

The special track is a continuous band of rubber, smooth on the inner surface and with adequate traction-lugs on the outer surface. It cannot stretch or lose its shape because it has a core of 20 to 30 endless, flexible wire-steel cables gripped at intervals by the track-guide and drive-lugs. The drive-sprockets impart their power directly to the cables and the rubber is used only as a cushioning medium and not to transmit power.

Combined with the high road speed are ease of operation and improved riding quality. Road shocks are cushioned by an exclusive Marmon-Herrington spring suspension which is self-dampening and which eliminates rocking, pitching and galloping. Operation has been perfected to make finger-tip control adequate and the rolling resistance of the unit has been reduced to the point where a brake is necessary. Economy of fuel consumption is the result of friction elimination in the driving mechanism.

Waukesha Advances Schulze

Appointment of F. C. Schulze as assistant sales manager has been announced by the Waukesha Motor Co., Waukesha, Wis. Mr. Schulze became associated with Waukesha in 1928, and began his training in the plant, spending a few months on each of several machine-shop and assembly-line jobs. His next step was to the purchasing department, where he got experience of value in understanding client problems. His knowledge of plant procedure comes from the several years spent in plant maintenance as assistant to the superintendent of this activity.

Mr. Schulze joined the sales department four years ago, and since then he has been active in sales direction and organization. Besides his inside training, he has spent some time in the field with users of Waukesha engines.

Handling Paramount Specialties

The Paramount Equipment Co., 911 East First Street, Tulsa, on November 1 took over exclusive distribution of Paramount specialties formerly manufactured and distributed by the Muskogee Iron Works, of Muskogee, Okla. The new company is managed by L. A. Vandervoort and C. E. Senseman, who have been responsible for the design, manufacture and distribution of this line, which includes rod-hangers, operating cages, rod-line weights, "flex-type" polished rod grips and clamps and sucker-rod connectors.

Young Radiator Expands

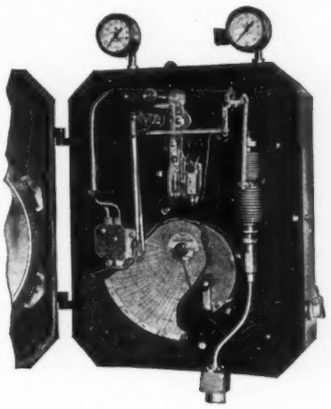
F. M. Young, president of the Young Radiator Co., Racine, Wis., announces changes of importance in its manufacturing facilities. Several new departments, handling a large battery of press brakes, shearing equipment, electric welders and other machinery for welding and machining, have been established. Floor space has been almost doubled. Machine shop and sheet metal shop are now entirely self-contained and separate from the other activities. This provides much more space, more machine equipment and allows for a wider range of facilities to better handle increased business. Laboratory facilities have been improved with additional room and testing equipment. Entrance of the company into the manufacture of equipment for the heating and ventilating and air-conditioning field has broadened the scope of its activities.

Vacuum Systems, Inc., Formed

Vacuum Systems, Inc., with executive offices at 436 The Arcade, Cleveland, Ohio, has been incorporated and taken over all the assets of the Crescent Pump Co., Detroit, Mich., which formerly manufactured the Crescent Roto-Piston dry vacuum pump. Officers of the new company are: President, Louis H. Mesker; vice presidents, B. E. Hathaway and H. W. Dorsey; secretary, W. L. Holloway. The company has retained the services of W. A. Hatcher, inventor of the Crescent pump, who will head the engineering department and serve as general consultant in vacuum problems.

New Line of Absolute-Pressure Instruments Now on Market

The critical relationship between absolute pressure and the physical properties of gases and va-



pors under low pressure is too frequently ignored. Unless fluctuations in barometric pressure are considered, errors in measurement and serious variations in processing may result from the apparently negligible discrepancy. Advanced engineering practice specifies the absolute-pressure system for low-pressure measurement.

In line with this technological advancement, the Taylor Instrument Companies, Rochester, N. Y., announced a series of instruments for indicating, recording and controlling absolute pressure.

The absolute-pressure element consists of a flexible phosphor-bronze bellows to the inside of which the pressure medium under measurement is communicated. Connected with this assembly, and opposing its action, is a second identical metal bellows which has been evacuated and sealed, thus comprising an atmospheric-pressure compensator.

These instruments are applicable to distillation units, evaporators, condensers, etc.

HUGE ABSORBER REQUIRES 1,000 FEET OF WELDING

More than 1,000 lineal feet of welding was required to fabricate this absorber designed for use in treating oil. It is 8 feet in diameter at the bottom, 7 feet in diameter at the top and 58 feet, 10 inches high. The $1\frac{1}{16}$-inch flanged No. A-70 steel bottom section required 10 beads of welding. The $1\frac{1}{8}$-inch flanged No. 70-A steel top required 8 beads in all roundabout and vertical seams. The vessel has 26 flanges or manholes varying in size from 8 to 24 inches and was fabricated by the Tulsa Boiler & Machinery Co. with Westinghouse Flexarc welders.

Oil Man's Calendar

November

19—Tulsa, Mid-Continent Oil and Gas Association membership meeting, Tulsa Club.

December

2-3—Dallas, Tex., joint annual meeting of standing committees on federal income and excise taxation and on state and local taxation of general Mid-Continent Oil and Gas Association, Baker Hotel.

6—Memphis, Tenn., National Asphalt Congress.

6-10—New York, American Society of Mechanical Engineers.

6-11—New York, Exposition of Chemical Industries, Grand Central Palace.

7-9—Omaha, Neb., Nebraska Petroleum Marketers, Inc.

8-10—Flint, Mich., S.A.E. National Production Meeting.

14—Tulsa, annual meeting of directors of Mid-Continent Oil and Gas Association.

1938

January

13—Oklahoma City, Independent Oil Jobbers Association of Oklahoma.

17-21—Cleveland, Ohio, American Road Builders Association.

24-25—Minot, N. D., Northwest Petroleum Association, North Dakota Division.

27-28—Minneapolis, Minn., Northwest Petroleum Association, Minnesota Division, Hotel Radisson.

February

7-9—Louisville, Ky., Kentucky Petroleum Marketers Association, Brown Hotel

14-18—New York, American Institute of Mining and Metallurgical Engineers, annual meeting, Engineering Societies Building.

22-24—Columbus, Ohio, Ohio Petroleum Marketers Association, fifteenth annual convention and marketing exposition, Deshler-Wallick Hotel.

March

7—Rochester, N. Y., American Society for Testing Materials, Spring Regional Meeting and Group Committee Meetings.

16-8—New Orleans, twenty-third annual meeting, American Association of Petroleum Geologists, Roosevelt Hotel.

April

13-15—Cleveland, Ohio, National Petroleum Association.

13-15—Houston, Tex., Petroleum Industry Electrical Association.

17-21—Dallas, Tex., American Chemical Society.

20-22—Buffalo, N. Y., American Institute Mining and Metallurgical Engineers, Open Hearth Conference.

May

(?)—Tulsa, Okla., Natural Gasoline Association of America.

CLASSIFIED ADVERTISING

Leases and Drilling Blocks

New Texas Oil and Gas Leases. Large or small tracts for brokers and salesmen. State requirements. H. H. WHITE, P.O. Box 674, San Antonio, Texas.

SECURITY ABSTRACT COMPANY
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Fee, Lease & Mineral Ownership on short notice. Ownership maps.

ILLINOIS
A complete weekly report on Illinois operations.
One month $5.00
Six months $25.00
Sample report on request.
OIL NEWS SERVICE
P. O. Box 146 Flora, Illinois

ARKANSAS
Does not have any production (proration) restrictions. The opportunity for quick "payouts" is obvious. Come here and investigate royalty and lease opportunities
WILLIAM MONROE LAYTON
P. O. Box 411 Texarkana, Ark.

CAN FIND any oil structure that will produce when penetrated. P. O. Box 308 Tonkawa, Oklahoma.

New Mexico OIL LEASES WHOLESALE 40 acres at a time.
Roy G. Barton, Clovis, New Mexico.

Specializing leases twenty acres up dollar acre, East Tex., La., S. Ark. Owners—Attorney, Box 1122, Little Rock, Arkansas

I HAVE two block of leases which I will sell for a drilling contract to 3500 feet, said leases located in Hamilton County, Illinois. If interested write or call on George W. Hogan, Jr., McLeansboro, Illinois.

FOR SALE — Large spread leases and non-developed royalties; Okla., Kan., Texas. 508 Ritz Bldg., Phone 2-0156, Tulsa.

DRILLING BLOCKS
On lease spreads in the Permian Basin or in the North Texas district.
JAMES T. CUMLEY
Brown Building, Wichita Falls, Texas

FOR SALE BY OWNER, Ten year paid up oil and gas lease, Brewster County, Texas; 40 acres and up at $1.00 per acre. Also royalty at reasonable prices. Address G. C. DAWSON, 1207 Bailey Ave., San Antonio, Texas.

DIXIE GAS AND OIL TRACTS No. 1 & 2
1,280 lineal feet available. 2 wells, cracking plant. South Lake well area well, Groveland, Fla. Schlumberger tested. Commercial quantities. 2 miles R.R. ⅛ royalty. State terms, particulars. Henry P. Noyes, St. Cloud, Fla.

I HAVE two blocks of oil and gas leases. One in the Panhandle of Texas and one in New Mexico, which I will sell for a drilling contract, or will put up the acreage for someone to drill for half interest. CHARLIE PRIOLO, 2301 W. 6th St., Amarillo, Texas.

WE OFFER 3,000 acres center Alamo Structure, Huerfano County, Colo. Test well south end of structure opened wet gas oil. Our drill north structure area just spudded. Best of geology, wet gas assured and will make deal with responsible operator to drill the central area. S. W. Pressey, Pueblo, Colo.

Leases and Drilling Blocks

ONE HUNDRED SIXTY ACRES
In heart of Clay City-Noble, Illinois pool, close to production. Want action and over ride. Fee Holder. Box J-122, The Oil and Gas Journal, Tulsa, Oklahoma.

FOR SALE Oil producing leases with many locations yet to drill, leases for sale near production and wildcat leases for drilling contracts.
W. P. HARLEY
Bowling Green, Ky.

FOR LEASE, 125 acres joining Darrow field. South of gusher. Write Bella Landry, 516 Iberville St., Donaldsonville, La.

OIL LEASE. 480 acres, Sec. 340, Coke County, Texas, $2.00 per acre. Owner, J. MANZ, Olmitz, Kansas.

FOR SALE—East Kansas Gas Properties, including Booster Station; 68 gas wells; approx. 7000 acres; monthly income $1200. KANSAN OIL CORP., 302 Midland Bldg., Kansas City, Mo.

7220 ACRE BLOCK—FEE LAND, HUDSPETH COUNTY, TEX., $5 per acre, 97½c per ac. due State, at 3%, payable about 30 years. In Orange Basin district, fine geology, almost entirely surrounded by big company blocks—Shell, Magnolia, Rio Grande, etc. Ready for development now, or wonderful fee land investment. Price is for quick deal. GEORGE M. COWELL CO., 412 W. 6th St., LOS ANGELES, CALIF.

HAVE structure 10,000 acres leases New Mexico, best geology, location, test well partly drilled, fully equipped machinery, casing. Account death partner must arrange deal. Will sell entire or part. C. H. Radford, Box 614, Pueblo, Colorado.

Leases and Drilling Blocks

NEW MEXICO OPPORTUNITY — The well-known Tome Structure, Eastern Valencia County, is now being developed. This is estimated to be one of the first and largest recognized structures in State. Shallow drilling already completed verifies every geological prediction. Extensive development already started.

A limited amount of acreage on this structure is available, including offset acreage and drilling blocks. Consult RINGLE DEVELOPMENT CORPORATION, owner, P. O. Box 286, 'Phone 3365, Albuquerque, New Mexico.

ATTENTION: DRILLERS AND OPERATORS!
The State of Nebraska offers a bonus of $15,000 each for producing the first Oil or Gas Well.
We have block of leases, approximately 20,000 acres no rental, in central Nebraska basin. Should be in producing area. Test well wanted. Make us a proposition. WRITE: HOMESTEAD CORPORATION, Trustee, 310 Merchants National Bank Building, Omaha, Nebraska.

LARGE BLOCK of acreage in northwestern part of Red River County, Texas. Will make reasonable deal for a well. Good geological and magnetmeteric reports. W. H. Upton, Paris, Texas.

FOR SALE—88 wells, 870 acres of leases, many locations to drill. No proration. All leases connected to pipe line. Address 321 East Court Street, Bowling Green, Ohio.

Leases and Drilling Blocks

ILLINOIS: 3,000 acres; will give half interest for drilling contract. Recommended for development. RESEARCH SERVICE, 423 Cuyahoga Bldg., Cleveland, Ohio.

WANTED—Producing oil lease for $20,000 cash. Write full information, Box 7342 Oakland, Pittsburgh, Penna.

Patent Attorneys

JACK A. SCHLEY
PATENT LAWYER
Patents Obtained — infringement practice in all Courts—oil field experience. 1807-11 Tower Petroleum Bldg., Dallas. 2014 Second Nat'l. Bank Bldg., Houston. 707 Insurance Building, San Antonio. 433 Munsey Building, Washington, D. C. Address any of these offices.

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CAPITAL SEEKERS—Put your project before 260 Key-Men. Cost trifling. Details free. AMSTER LEONARD, Fox Theater Building, Detroit, Michigan.

Mailing Lists

ROYALTY INVESTORS, by deed. Speculators in low priced leases. Both by states. Oil Industry Mailing List Co., Tulsa Loan Building, Tulsa, Oklahoma.

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Classified Display is set with a border and may be used in one or two column sizes.

1 Inch	*1 time*	*$5.00*
1 Inch	*13 times*	*4.50 per inch*
1 Inch	*26 times*	*4.00 per inch*
1 Inch	*52 times*	*3.50 per inch*

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3 Lines	*$1.05*	*$1.80*	*$2.55*	*$3.30*
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6 Lines	*2.10*	*3.60*	*5.10*	*6.60*
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8 Lines	*2.80*	*4.80*	*6.80*	*8.80*
9 Lines	*3.15*	*5.40*	*7.65*	*9.90*
10 Lines	*3.50*	*6.00*	*8.50*	*11.00*

We reserve the right to withhold all advertising of questionable character. To avoid delay be sure to send remittance with copy. We will set your ad in the smallest amount of space possible and refund all overpayments. One-time insertions will not be run until fully paid. Forms close MONDAY NOON before each issue date.

THE OIL AND GAS JOURNAL
Tulsa, Oklahoma